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FIGURES MADE EASY.

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FIGURES MADE EASY

A FIRST ARITHMETIC BOOK

INTRODUCTORY TO 'THE SCHOLAR'S ARITHMETIC'

BY THE SAME AUTHOR

52200

BY

LEWIS HENSLEY, M.A.

Formerly Fellow and Assistant Tutor of Trinity College, Cambridge

Gx n. 31

Oxford

AT THE CLARENDON PRESS

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PREFATORY REMARKS.

[These early lessons are addressed to young scholars partly in the manner of oral teaching, with the inevitable omission however of many repetitions and illustrations which an intelligent teacher would naturally use.

Those parts of the lessons which are marked † may be passed over on first coming to them, but after the next lesson or two the former lessons should be reviewed and these parts brought in.

Passages enclosed in brackets are addressed to the Teacher.

These lessons have been specially prepared as an introduction to the larger work of the author, entitled 'The Scholar's Arithmetic,' which belongs to the same series.]

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FIGURES MADE EASY.

LESSON ONE.

FIRST NOTIONS OF COUNTING.

I AM sure that my young scholars know the difference between several oranges or nuts or marbles, and only one orange or nut or marble.

They will know what is meant by holding up only one finger, or more than one.

I dare say that they can count up to five or six at least, but as it is better to take nothing for granted, let me see.

[I hold up one finger.]

How many fingers am I holding up? *One finger.*

[I add another.]

How many now? *Two fingers.*

[Putting the fingers down.]

Then one finger and one more makes how many? *Two.*

[Again showing two fingers, and then adding another.]

How many fingers now? *Three fingers.*

Two fingers and one more are how many? *Three.*

[Such questions must be repeated, first with and then without the fingers, as often as is found necessary.]

Let me see you hold up one finger.

Now two. Now three.

Look at these strokes: how many are there? || *Two.*
And these? ||| *Three strokes.*
Count these dots: how many? •• *Two dots.*
And these? ••• *Three dots.*
Two fingers and one are? *Three fingers.*
Two strokes and one are? *Three strokes.*
Two dots and one are? *Three dots.*
Very well. [Showing four fingers.]
Now how many fingers? *Four fingers.*
Now the whole hand: how many? *Five fingers.*
These strokes: how many? |||| *Four strokes.*
These? ||||| *Five strokes.*
These dots: how many? •••• *Four dots.*
And these? ••••• *Five dots.*
Then three strokes and one are? *Four.*
And four strokes and one? *Five.*

Yes, and the same for dots, or fingers. Now look at these strokes carefully, for I want you to know the look of each number of strokes or dots directly you see them.

| | || ||| |||| |||||

Now name them as I point to them.

[I point to them in order, then in backward order, then at random. When there is any difficulty, I go back again to counting. Then handing a box of any common things, as marbles, balls, peas, nuts, or beads, I go on,]

Count out three marbles, and put them on the table. Count out four nuts: now five: now four marbles: now three beads: now five: and so on.

[Repeat and vary the questions in many ways. The Numeration-frame may also be employed, using only at present the balls on the units-wire.]

LESSON . TWO.

COUNTING MENTALLY.

[Showing the different objects named, I ask,]

Three marbles and one are? *Four marbles.*

Three nuts and one are? *Four nuts.*

Three balls and one are? *Four balls.*

Three things of any other kind and one would make? *Four.*

Yes: you see that it does not matter what objects we are counting, so long as they are all of the same kind. We use the same words, one, two, and so on in each case. For instance, let me hear you count these pens:—

One, two, three, four—pens.

These farthings:—

One, two, three, four, five—farthings.

These beads:—

One, two, three, four, five—beads.

Very well: then we can say how many one and one are, without knowing what things they belong to. For instance, if you heard some one say to me, I give you this one, and one more, you would be able to say how many were given me, would you not, even without knowing what the speaker was talking of?

Yes; there would be two.

Very well: then you can say universally, one and one are two.

And one more would make? *Three.*

And one more? *Four.*

And one more? *Five.*

Yes:—these names, one, two, three, four, five, and

others, by which we can say how many things we mean of a particular kind, are called numbers.

Four apples and one are? *Five apples.*

But four apples and one pear would not make five apples, or five pears. They would only be four apples and one pear, because they are not of the same kind. In counting we only count things of the same kind, or which can be called by the same name. Thus four daisies and one butter-cup would not make five daisies, but we might call them five flowers.

What might we call—four little boys and one little girl? *Five children.*

EXERCISES.

Let us go over our results:—

One and one are two, two and one are three, three and one are four, four and one are five.

Count up to five aloud as quick as you can:—one, two, three, four, five.

Again: again:—quicker. Now backwards, forwards, backwards, forwards.

Show me three fingers:—five: two: four.

Now as quick as possible:—four, one, five, two.

What three things do you see in the room?

How many legs has my chair?

Make four strokes on the slate: now three: now five.

LESSON THREE.

COUNTING UP TO TEN.

We must now count a little further. We have counted the fingers on one hand—how many were there? *Five fingers.*

One more finger makes six fingers—five and one are? *Six.*

How many strokes are here? ||||| *Five strokes.*

Now one more, how many? |||||| *Six strokes.*

Let me hear you count these dots. •••••• *One, two, three, four, five, six—dots.*

Six strokes and one are seven. ||||||| Count them.

Seven strokes and one are eight. |||||||| Count them.

Eight strokes and one are nine. ||||||||| Count them.

Nine strokes and one are ten. |||||||||| Count them.

Count the fingers on your two hands.

Show me five fingers: now seven: three: eight.

Count me out eight marbles: now six nuts: now ten.

Sum up results:—

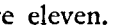
One and one are two, two and one are three, three and one are four, four and one are five, five and one are six, six and one are seven, seven and one are eight, eight and one are nine, nine and one are ten.

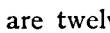
Count up to ten aloud as quickly as you can:—One, two, three, four, five, six, seven, eight, nine, ten. Again: again: now backwards, forwards, backwards.

[When a lesson is not mastered, it must be repeated again, and fresh illustrations brought in. And even after a lesson seems to be mastered, it should occasionally be reviewed briefly and rapidly.]

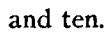
LESSON FOUR.

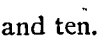
COUNTING TO TWENTY.

Ten and one are eleven.  Count them.

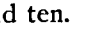
Eleven and one are twelve.  Count them.

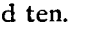
Eleven and one is the same as ten and two, or twelve. The numbers which follow do not get names which are quite new: they are made up from those which we know already.

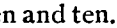
Thirteen is three and ten.  Count them.

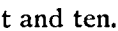
Fourteen is four and ten.  Count them.

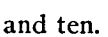
Fifteen is five and ten. Count them.

Sixteen is six and ten.  Count them.

Seventeen is seven and ten.  Count them.

Eighteen is eight and ten.  Count them.

Nineteen is nine and ten.  Count them.

Twenty is two tens.  Count them.

What else is thirteen besides three and ten? *Twelve and one.*

And fourteen? *Thirteen and one.*

[And so on.]

All these words (except eleven and twelve) end in the syllable *teen*, which means that the number named in the first syllable is increased by ten. Seventeen is seven and ten. These numbers (beginning with ten) may be called the teen-numbers, or teens.

EXERCISES.

What is fifteen and one? twelve and one?

Count up to twenty aloud: again, beginning at eight.

Count out twelve, fifteen, nineteen, marbles, beads.

Count backwards from twenty to one.

LESSON FIVE.

COUNTING BEYOND TWENTY.

We call two tens twenty, two tens and one more twenty-one; one more, twenty-two; one more, twenty-three; one more, twenty-four; and so on, until we come to three tens, which is thirty; one more, thirty-one, then thirty-two, up to four tens, or forty; so again to five tens, fifty; six tens, sixty; seven tens, seventy; eight tens, eighty; nine tens, ninety; ten tens, a hundred.

Suppose you have to count out a number of beads. Count out a set of ten, and put it apart; then another set of ten, and put it apart: and so on, until there are no more tens; then find how many remain over.

Suppose there are two tens, and five over: it is twenty-five.

If three tens, and two over: it is thirty-two.

If seven tens, and six over: it is seventy-six.

In each case, except in the teen-numbers, the last syllable expresses the *over*, and the first word the number of tens.

Almost all nations reckon by tens in this way, and the reason is that people began to count with their ten fingers.

Sum up results in tens: — Ten and ten are twenty; twenty and ten are thirty; and so on.

Count the tens quickly: ten, twenty, thirty, forty, fifty, sixty, seventy, eighty, ninety, a hundred.

Now count from one to a hundred.

How many tens are there in forty-seven, and how many over? In fifty-two? Thirty-three? Sixty-nine?

LESSON SIX.

COUNTING BY TWOS.

Counting a large number of objects is very tedious, if we count only one at a time. You must now learn to count two at a time.

Count this row of strokes, || || || || || || || || || ||

[Point to each set in succession, until the scholar can say two, four, and so on along the line. When he fails he must count by ones and begin again.]

Count this row of strokes, | || || || || || || || || ||

Next, count by threes, ||| ||| ||| ||| ||| |||
Do the same with these, | ||| ||| ||| ||| ||| |||
And with these, || ||| ||| ||| ||| ||| |||

Now count these strokes, first by twos, then by threes:

|||||||||||||||||||||

Do the same with a set of objects in a row, or with marbles, or beads.

Do the same aloud, without any objects to count.

Begin at one, and count on by twos.

Begin at four, and count on by twos.

Begin at five, and count on by twos.

The same from eight, from eleven, from three.

Begin at four, and count on by threes; at seven; at six.

† Count these sets of strokes, |||| |||| |||| |||| ||||
| |||| |||| |||| |||| and || |||| |||| |||| ||||
||| |||| |||| |||| |||| and ||||| ||||| ||||| |||||

Count up to twenty aloud, by fours, and by fives.

LESSON SEVEN.

ON ADDITION.

If I have two nuts in one hand and two in the other, how many have I? *Four nuts.*

That is called adding, or Addition.

Addition or adding is putting two or more numbers together and finding what number they make. That number is called their sum. Counting is adding, but the difficulty of adding does not begin till we add more than one. Counting is like walking, step by step: in adding we have to make a spring from one number to another, passing over one or more. Counting by twos and counting by threes are the first steps in adding.

Remark. We can only add together things of a like kind. If some are marbles, all must be marbles, or we cannot put them together in one number.

Two marbles and two more, how many? *Four marbles.*

Two of any sort, and two more, how many? *Four.*

Two and two then are? *Four.*

Three and two, how many?

Three marbles and one would be? *Four marbles.*

Well, three marbles and two must be one more than three and one, must they not? *Yes.*

But, three and one are? *Four.*

Then three and two are? *Five.*

Count out five marbles and show me that they are the same as three and two. Show me on your fingers that three and two are five.

Four marbles and two are?

[All additions of two may be made to depend on the first number and one, with one more. But the scholar should also be sent back to count by twos.]

Two marbles and three are?

Why, it is the same as three and two. *It is five.*

Repeat several times, Two and three are five.

Three and three are? Four and three are?

[All additions of three may be made to depend on the first number and two, with one more. But the scholar should also be sent back to count by threes.]

Two marbles and four? *The same as four and two. Six.*

And so on.

Any numbers to be added, such as seven and five, may be separated into seven and four and one, or like numbers, but they must be seen at last as seven and five, or the power of adding has not been acquired.

For some time little collections of beads or peas may be counted out to correspond with the sum, and placed upon separate squares of the Chequer-board, to be looked at as seven and five, and then thrown together and counted, or ranged in a row, as twelve.

Twenty is the limit of adding for the present.

EXERCISES.

Count these strokes by sets, beginning at any point:—

Two marbles and three and five are?

Six marbles and four and nine are?

Three apples and five and six are?

LESSON EIGHT.

ON SUBTRACTION.

Two marbles and two more are? *Four marbles.*

If I take two away again, how many are left. *Two.*

Then two marbles taken from four leave? *Two.*

Five nuts and three are? *Eight.*

Then if I took back three nuts from the eight, there would be? *Five.*

Taking away in this manner is called Subtraction.

Subtraction is taking away a part of a number, and finding what number remains.

Two and one are? *Three.*	Then three, less one? *Two.*
Three and one are?	Four, less one?
And so on.	
Two and two are?	Four, less two?
Three and two are?	Five, less two?
And so on.	

Recapitulate the additions, turning all additions into subtractions, so that learning addition and subtraction may go on together.

Remark. We cannot take a larger number from a smaller. If there are five marbles on the table, we can only take five away, or some smaller number.

Subtraction always supposes the numbers to mean things of the same kind.

EXERCISES.

Count backwards from twenty by twos; by threes; by fours.

Run up to twenty from any number by twos, threes, and so on, and back again as fast as possible.

LESSON NINE.

ON LEARNING THE FIGURES.

The figures may now be learnt, as here set down.

One. Two. Three. Four. Five. Six. Seven. Eight. Nine. Ten.

1 2 3 4 5 6 7 8 9 10

Ten is made up of a 1 and a 0, called nought.

EXERCISES.

Read the following figures: and also the figures in Exercise Table A, Lesson 14.

2 4 1 3 5 0 2 6 8 7 5 6 9

---

† LESSON 10.

ON THE WORD UNIT.

We count marbles, nuts, apples, or any other things, in just the same way, always saying,

One, two, three, four, five, six, seven . . . marbles;
One, two, three, four, five, six, seven . . . nuts;

or the same for apples, or any other things.

There is one word which will suit all these different things. We call *one* a unit, whatever may be the kind of things which we are counting. 1 is one unit, 2 is two units, 3 is three units, 4 is four units, 5 is five units, 6 is six units, 7 seven units, 8 eight units, 9 nine units.

LESSON 11.

ON TWO-FIGURE NUMBERS.

[Begin by repeating Lessons Four and Five.]

Ten is written 10, the 1 meaning that there is 1 set of ten, and the 0 that there is no *over*.

Eleven is written 11, the 1 on the left-hand meaning 1 ten, and the other 1 that there is 1 over.

1 ten and 2 over, or twelve, is written 12;

1 ten and 3 over, or thirteen, is written 13;

1 ten and 4 over, or fourteen, is written 14,

and so on, 15, 16, 17, 18, 19.

Twenty is 2 tens and 0 over, so it is written 20;

Twenty-one is 2 tens and 1 over, so it is written 21;

and so on, 22, 23, 24, 25, 26, 27, 28, 29.

Thirty is 3 tens and 0 over, so it is written 30;

Thirty-one is 3 tens and 1 over, so it is written 31;

and so on, 32, 33, 34, 35, 36, 37, 38, 39.

So also forty, 40; forty-one, 41; 42, 43, 44, 45, up to fifty, 50; sixty, 60; seventy, 70; eighty, 80; ninety, 90; and after ninety-nine, 99, a hundred, 100; which last may be considered either as 10 tens, or as 1 hundred, with no over.

EXERCISES.

How must we express in figures—twenty-three? thirty-five? forty-six? fifty-nine? seventy-one? eighty-two? ninety-nine?

How many tens are there in 71, 32, 65, 43? and how many over in each case?

Write in figures the numbers from twenty to forty.

LESSON 12.

ON ADDITION AND SUBTRACTION. TABLES.

If we were to run along the row of figures 1 2 3 4 5 6 7 8 9, adding 1 to each, thus, 1 and 1, 2; 1 and 2, 3; and so on, and then adding 2 to each, thus, 2 and 1, 3; 2 and 2, 4; and so on, and afterwards with 3, 4, up to 9, we should have gone through all the additions of the single figures. These results are all written down in the Table below.

Read the first column, as you go down it:—One and one, two; one and two, three; one and three, four.

1 and	2 and	3 and	4 and	5 and	6 and	7 and	8 and	9 and
1, 2	1, 3	1, 4	1, 5	1, 6	1, 7	1, 8	1, 9	1, 10
2, 3	2, 4	2, 5	2, 6	2, 7	2, 8	2, 9	2, 10	2, 11
3, 4	3, 5	3, 6	3, 7	3, 8	3, 9	3, 10	3, 11	3, 12
4, 5	4, 6	4, 7	4, 8	4, 9	4, 10	4, 11	4, 12	4, 13
5, 6	5, 7	5, 8	5, 9	5, 10	5, 11	5, 12	5, 13	5, 14
6, 7	6, 8	6, 9	6, 10	6, 11	6, 12	6, 13	6, 14	6, 15
7, 8	7, 9	7, 10	7, 11	7, 12	7, 13	7, 14	7, 15	7, 16
8, 9	8, 10	8, 11	8, 12	8, 13	8, 14	8, 15	8, 16	8, 17
9, 10	9, 11	9, 12	9, 13	9, 14	9, 15	9, 16	9, 17	9, 18

If instead of '1 and,' '2 and,' at the heads of these columns, we write or imagine '1 from,' '2 from,' meaning 1 or 2 from the second figure in each case, the Table becomes a Table of Subtractions, and may be read 1 from 2, 1; 1 from 3, 2; and so on throughout.

The Table having been run through for units, the same should be done for tens:—ten and ten, twenty; ten and twenty, thirty; and so on.

LESSON 13.

ON WRITING THE FIGURES.

The scholars may now begin to write figures. This is to be done by going back to Lesson Nine, and copying down the figures as there given.*

EXERCISES.

Write down in figures the numbers from 10 to 20;

Write down in figures the numbers from 20 to 30;

Write down in figures the numbers from 30 to 40, and so on. Finally, all the numbers from 1 to 100.

Write down the first column of the Addition Table;

Write down the second column of the Addition Table;

Write down the third column of the Addition Table, and so on.

Write down all the even numbers up to 20.

Write down all the odd numbers up to 20.

Write down all the numbers made by adding to 1 the number 3 over and over again.

The same, beginning from 2.

Write down all the numbers made by adding to 1 the number 4 over and over again.

The same, beginning from 2, and from 3.

Write down all the numbers made by adding to 1 the number 5 over and over again.

The same, beginning from 2, 3, 4.

So for 6, 7, and so on.

---

* Note, that in *writing* the figure 4, the strokes are not made to meet at the top.

LESSON 14.

ORAL EXERCISES.

The Table given below will be found to be useful in many ways.

Let the scholar take any column or row of which the guide-letters are named to him, and add a part, or the whole, orally. If he begins at the bottom of the first column, marked (a), he should say, at first, 3 and 1, four, and 2, six, and 3, nine, and so on. As soon as possible he should be taught to say *nothing* aloud *except the results*, namely, three, four, six, nine, and so on. He should have a little practice of this kind every day, adding up or down, backwards or forwards.

Exercise Table. A.

	a	b	c	d	e	f	g	h	i	j	k	l	
A	5	3	6	5	8	1	2	3	4	2	6	5	A
B	2	2	1	8	7	0	6	5	4	3	0	8	B
C	8	3	9	0	6	5	4	8	7	7	6	0	C
D	7	5	2	4	5	7	3	7	9	6	5	7	D
E	9	2	7	9	4	0	7	9	3	7	2	6	E
F	6	7	3	8	6	5	8	9	9	3	2	4	F
G	5	1	5	4	7	3	6	5	6	2	7	8	G
H	4	2	4	3	6	5	4	3	8	9	8	7	H
I	3	3	2	3	5	4	4	6	4	4	6	5	I
J	2	3	1	4	3	5	2	0	3	0	2	1	J
K	1	2	2	5	2	0	7	0	5	4	3	6	K
L	3	1	4	6	8	9	5	4	3	2	6	1	L
	a	b	c	d	e	f	g	h	i	j	k	l	

Begin at 2, or other number, and keep on adding 3 continually.

Do the same, adding continually 4; then the same with 5, then with 6, 7, 8, 9.

Begin at 2 (or other number), and add 4, 3, 5; 4, 3, 5; over again and again.

Begin at 2 (or other number), and add 9, 2, 8, 7, 5; and over again and again.

In all cases say nothing except the results; for example, in the first exercise, say two, five, eight, eleven, and so on.*

Begin at 19 (or other number), and continually subtract 3.

Begin at 51 (or other number), and continually subtract 7.

[A few minutes should be given occasionally to exercises of this nature for some years.]

To be worked mentally:—

What is 10 and 12? 10 *and* 10 *and* 2: *or* 22.

Add 25 and 32. 25 *and* 30 *and* 2; 55 *and* 2: *or* 57.

Add 12 and 13; 15 and 14; 16 and 22; 21 and 23; 22 and 13; 23 and 19; 24 and 23; 26 and 21.

Add 15 and 33; 41 and 19; 73 and 22; 46 and 29; 65 and 27; 39 and 42.

[In adding mentally it is easiest to begin with the tens; on paper we begin with the units.]

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* For these exercises, a few good sized cards with single figures printed upon them are very useful. Place them in a row and shift them often.

LESSON 15.

ON NUMERATION.

We have seen that there are two ways of expressing numbers, first by words, and secondly by figures, and you have learnt how to write numbers in figures up to 100.

By the same method of dividing every number into sets of 10 we can write any number in figures. We call

Ten units one ten, which we write 10
Ten tens one hundred, which we write 100
Ten hundreds one thousand, which we write 1000

As the extreme importance of the subject requires repetition and varied illustrations, the following general explanation of the method of reckoning large numbers is now added.

Suppose that you were counting, with some of your companions, a flock of sheep as they passed you, and that you had begun to count them on your fingers. When you came to ten you would have to begin again, and to remember that you had counted ten once. When you came to ten again, you would have to remember that you had counted ten twice. After a time you would be very likely to make a mistake as to the number of tens you had already reckoned. Let one of your companions now stand on your left hand and hold up a finger for every time you have counted ten, and let another stand on his left hand and hold up a finger for every time that he has counted ten, and so on; you

would then be able to keep account of all without a mistake.

Now look at the way of writing ten with the figures. We write 10. What is this left-hand figure? *One.* Yes, it here means *One ten.* The other figure is called a nought, that is, nothing. It has this use. We agreed, you remember, that in counting the sheep when you came to ten you should put down your hands, and your left-hand companion should put up one finger to signify *One ten.* Exactly in the same way the 0 means nothing in itself, but it shows that the 1 standing to the left of it signifies 1 ten, and if you watch the figures in counting higher, you will see that they follow exactly the same course as was described for counting the sheep.

After ten comes eleven, or ten and one; in figures 11.

After eleven comes twelve, or ten and two; in figures 12.

After twelve comes thirteen, or ten and three; in figures 13.

After thirteen comes fourteen, or ten and four; in figures 14.

After fourteen comes fifteen, or ten and five; in figures 15.

After fifteen comes sixteen, or ten and six; in figures 16.

After sixteen comes seventeen, or ten and seven; in figures 17.

After seventeen comes eighteen, or ten and eight; in figures 18.

After eighteen comes nineteen, or ten and nine; in figures 19.

After nineteen comes twenty, or two tens; in figures 20.

[Show each step of the Lessons on Numeration upon the Numeration-frame (see Appendix), carefully keeping each wire to its proper value.]

LESSON 16.

ON NUMERATION—Continued.

After twenty we have

21	22	23	24	25
twenty-one,	twenty-two,	twenty-three,	twenty-four,	twenty-five,

26	27	28	29	30
twenty-six,	twenty-seven,	twenty-eight,	twenty-nine,	thirty,

or three tens; then 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, forty, or four tens; 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, fifty, or five tens; and so again to 60, sixty; 70, seventy; 80, eighty; 90, ninety; nine more makes 99, and then one more 100, which is called a hundred, being 10 tens.

The figures for one hundred answer to the time when the second companion to the left held up one finger, to show there were ten tens.

The second hundred begins again, exactly like the first, 101, 102, only that the 1 remains to show that one hundred has been already reckoned, and the 0 must be carefully written in to keep it in its proper place. If the 0 were left out, we should only have 11, or eleven.

After another hundred, we come to two hundred, 200.

After another hundred, we come to three hundred, 300.

After another hundred, we come to four hundred, 400, and so to 500, 600, 700, 800, 900, till we get to 999, after which one more makes a thousand, or ten hundreds, which is written 1000; and then the counting goes on again on the same plan.

It thus appears that by an ingenious device (that of giving a meaning to the place which a figure occupies with respect to others), the first nine figures and a nought enable us to express any number whatever. Figures standing alone, or on the right hand of other figures, have their simple value of so many units, and are said to be in the units-place. One grade, that is, one step to the left, and they mean so many sets of ten; another grade to the left, and they mean so many sets of a hundred; one more, and they mean so many sets of a thousand. Thus a figure becomes ten times as valuable for every move to the left, and we know the value of a figure by looking to see how many figures there are to the right of it.

EXAMPLES.	Thousands. Hundreds. Tens. Units.
Three hundred and five,	305
Three thousand two hundred and ten,	3,210
Three thousand three hundred and thirty-three,	3,333
One thousand one hundred and eleven,	1,111
Nine thousand and ninety,	9,090

There are always two figures and no more after the hundreds, and three figures and no more after the thousands, but some of them may be noughts.

LESSON 17.

ON THE NOUGHTS.

It is about the noughts that beginners mostly make mistakes.

A nought keeps a vacant place, and disappears if a figure comes to occupy it. Thus two thousand is 2,000, and two thousand two hundred and twenty-two is 2,222, so that the 2's come in and thrust out the noughts, and there are still three figures, and only three, following the thousands.

The thousands are often (but not always) separated from the three right-hand figures by leaving a little space, or by a comma.

When you first begin to write down numbers from dictation, you may put down some dots under which each figure is to come, thus . . . . . .

31,01
23,456
315,614

These dots show the place for the units-figure, for the tens-figure, for the hundreds-figure, and for the thousands-figure: just as I have written 3,101, and 23,456, and 3,15,614 below the dots.

You should be able to point to these dots, and say,

This is where I shall put the units-figure;
The tens-figure here;
The hundreds-figure here;
And so on.

If for any of these you have no other figure, put a 0.

But you must never write such a number as this: 0356, or 0025. They ought to be 356, and 25, because 0's never stand without some other figure to the left of them.

Exercises in Numeration.

A. Write down in figures :—

1. Ten, fifteen, twenty, twenty-seven, thirteen, thirty.
2. Thirty-six, fourteen, forty, forty-five, fifty, fifteen.
3. Sixty, sixteen, sixty-one, sixty-five, fifty-six, fifty-eight.
4. Seventy, seventeen, seventy-two, eighty, eighteen.
5. Ninety, nineteen, ninety-one, ninety-three, a hundred.

B. Write down in words:—

1. 21, 91, 13, 31, 72, 16, 51, 71, 63, 85, 72.
2. 45, 15, 94, 36, 17, 99, 37, 61.

C. Write down in figures :—

1. A hundred and four, a hundred and ten, a hundred and fifteen, a hundred and twenty, a hundred and twenty-three.
2. A hundred and thirty-five, a hundred and thirty-seven, a hundred and thirty-nine, a hundred and forty-two, a hundred and fifty-seven.
3. A hundred and sixty-eight, a hundred and four, a hundred and seventy-three, a hundred and eighty-five, a hundred and ninety-seven, thirty, forty-three, a hundred and six.
4. Two hundred and five, two hundred and twenty-six, two hundred and thirty-five, two hundred and eighty-seven, three hundred and fifty-four, three hundred and nine.
5. Three hundred and ninety-seven, four hundred and forty-six, five hundred and six, five hundred and eighty, six hundred and seventy-four, eight hundred and nine, nine hundred and ninety, six hundred and eight, seven hundred and seventy.

D. Write down in words:—103, 116, 195, 203, 225, 37, 237, 309, 359, 460, 507, 691, 700, 801, 834, 902, 909, 954, 999, 301, 710, 40, 513, 601, 73.

E. Write down in figures:—

1. A thousand and six; a thousand and five; a thousand and ten; a thousand and twenty; a thousand and twenty-three; a thousand and twenty-five; a thousand and twenty-nine; a thousand and thirty.

2. A thousand and forty-nine; a thousand and fifty-eight; a thousand and eighty-nine; a thousand nine hundred and ninety-nine; a thousand one hundred and sixty-five; two thousand and four; two thousand three hundred and seven.

3. Two thousand eight hundred and fifty-six; three thousand and seventy-three; four thousand and ninety-six; eight thousand and forty-six; nine thousand and fifty-nine; seven thousand and three.

4. Ten thousand and seventy-two; eleven thousand and fifty-three; twelve thousand and forty-four; thirteen thousand and one; nineteen thousand and five.

5. Thirty thousand; forty thousand and six; fifty thousand and eighty; sixty thousand and seventy-four; ninety thousand and ninety.

F. Write down in words:—6003, 7102, 8156, 1026, 1113, 1562, 1083, 6056, 7070, 9019, 10000, 8888.

G. Write down in figures:—

1. Thirteen thousand and thirty; five hundred and two; seventy-six; a hundred thousand and seven; twenty thousand and two hundred; sixteen thousand.

2. Three hundred and sixteen; seven hundred and fifty; five hundred and ninety-four; eighteen thousand and two; nineteen thousand nine hundred.

H. Write down in words:—19090, 6153, 7126, 80031, 916, 999, 8098, 6273, 41000, 82001, 213, 61, 315, 31500, 501, 50101, 60060, 10101, 310, 700.

† LESSON 18.

RECKONING IN TENS, &c.

We may ask, respecting any number, such as 3815,
How many tens does it contain? Answer, 381;
or, How many hundreds does it contain? Answer, 38;
or, How many thousands does it contain? Answer, 3.

We get the answers to these questions by cutting off the figures which follow the tens, or the hundreds, or the thousands. The numbers so cut off are—those which remain over.

The number may be thought of in these five ways:—

thousands.	hundreds.	tens.	units.	thousands. hundreds. tens. units.
3815	3815	3815	3815	3815

It is three *thousands*, eight *hundreds*, one *ten*, and five *units*; or, three thousand, eight hundred, and fifteen *units*;
or, three hundred and eighty-one *tens*, and *five over*;
or, thirty-eight *hundreds*, and *fifteen over*;
or, three *thousands*, and *eight hundred and fifteen over*.

[Point out that the teen-numbers of hundreds are almost always used, as in 1872.]

EXERCISES.

How many tens are there in 48, 508, 615, 7316?
How many hundreds in 305, 7619, 8900, 216?
How many thousands in 9763, 15617?
Read the figures 1154, 1666, 1688, 1752.
Write in figures:—forty thousand and five; eighteen hundred and seventy-three; thirteen hundred and six.

LESSON 19.

ADDITION, WITH EXAMPLES.

All the additions which were carried on before with words, mentally, may now be repeated with figures, beginning at first with the lower figures.

Write the numbers to be added under one another, and draw a line. After writing the sum of the figures, draw a double line.

Units.	Units.											
					1	2	2	1	3	1	2	1
2	3	3	2	3	2	2	2	2	1	2	3	3
3	4	5	4	4	3	3	2	3	3	4	4	4
5	7	8										

3	2	1	3	1	1	3	1	5	5	4	5	5
4	4	5	2	5	5	2	5	2	3	5	5	5
6	5	5	5	2	3	4	4	4	3	3	2	3

Tens are added in the same way as units: two tens and three tens are five tens; or, in other words, twenty and thirty are fifty.

Tens. Units.	Tens. Units.									
				10	10	20	20	20	10	
20	30	10	40	10	20	20	10	20	20	
30	30	40	20	20	30	30	40	20	30	

20	30	20	10	20	30	50	40	40	60
30	20	30	20	30	40	40	50	40	20
30	40	30	50	40	50	30	30	60	30
50	50	40	60	60	50	20	60	50	40

If there are units as well as tens, the units are carefully placed under units, and the tens under tens: then the units are added to units, and the tens to tens. The units are added up first, and the sum (if less than ten) written under the units, and then we add up the tens.

Tens. Units.	Tens. Units.								
					11	32	33	33	31
32	41	22	23	42	22	23	32	42	22
43	54	32	41	43	33	43	34	42	45
75	95								
12	31	32	50	30	20	33	41	60	63
21	21	51	42	25	51	62	46	53	50
43	64	53	62	43	65	50	30	61	65

But it often happens that the sum of the units is more than ten. In that case the units-figure of the sum goes under the units, and the tens-figure of the sum must be added (or carried, as it is called) to the other tens. We do not write it down (except for a little while at first beginning), but *carry it in mind* to the tens, and start from it in beginning to add the tens. In the first example below, we have to add 25, 34, and 44. 13 is the sum of the units. I write 3 under the units and carry 1 ten to the tens, adding thus,—one, five, eight, ten. I set down 10. The sum is one hundred and three.

Hundreds. Tens. Units.									
			34	32	44	53	12	34	35
25	42	64	42	34	52	44	34	45	20
34	34	33	33	43	43	54	52	40	34
44	45	25	24	55	32	62	66	53	65
103									

Examples. Figures below Seven.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
21	32	33	32	24	31	43	30	24	41	24
32	33	20	31	43	24	30	14	40	14	32
23	23	31	42	44	31	44	4	3	43	25
—	—	—	—	—	—	—	—	—	—	—

(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
12	23	34	35	54	45	43	24	33	32	21
31	33	53	24	40	32	52	52	20	51	30
45	43	55	50	32	50	51	35	54	45	50
55	45	23	30	40	54	61	16	66	56	66
—	—	—	—	—	—	—	—	—	—	—

(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)
52	40	40	23	26	25	65	26	42	46	52
43	6	6	16	65	66	62	55	36	41	63
6	21	21	42	34	45	34	35	20	51	34
21	50	61	51	55	53	46	64	65	34	41
—	—	—	—	—	—	—	—	—	—	—

Examples with the Higher Figures.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
22	21	34	47	72	73	76	65	68	21	62
37	72	57	53	36	57	28	83	34	37	71
—	—	—	—	—	—	—	—	—	—	—

(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
65	27	46	56	18	81	36	13	65	31	41
56	34	35	38	23	32	80	26	87	21	32
38	75	87	72	77	76	57	73	47	60	69
—	—	—	—	—	—	—	—	—	—	—

(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)
34	41	54	23	92	23	52	61	56	73	90
76	31	36	91	31	61	41	91	96	22	37
53	98	87	34	32	39	93	70	78	41	43
92	97	98	63	49	71	87	85	41	60	26
—	—	—	—	—	—	—	—	—	—	—

† Next, to add higher numbers, as three thousand five hundred and sixty-one, four thousand six hundred and twenty-two, three hundred and seventy-five, seven thousand, and one thousand eight hundred and nine.

I write down the numbers, units under units, tens under tens, hundreds under hundreds. I add up the units, only using these words, nine, fourteen, sixteen, seventeen. Thus I find the total of units 17: I write 7 in the units place and carry 1 ten, from which I begin to add tens; one, eight, ten, sixteen: I put down 6 and carry 1 to the hundreds; one, nine, twelve, eighteen, twenty-three: I set down 3 and carry 2 to the thousands; two, three, ten, fourteen, seventeen: I write down 17. The sum is seventeen thousand three hundred and sixty-seven.

Tens of thousands. Thousands. Hundreds. Tens. Units.	Thousands alone.	Hundreds alone.	Tens alone.	Units alone.	3,561 4,622 375 7,000 1,809	
3,561	3	5	6	1		
4,622	4	6	2	2	17	Sum of units.
375	0	3	7	5	150	Sum of tens.
7,000	7	0	0	0	2,200	Sum of hundreds.
1,809	1	8	0	9	15,000	Sum of thousands.
17,367	15	22	15	17	17,367	All together.

Reason of the process. 3561 is 3 thousands and 5 hundreds and 6 tens and 1; and all the other numbers can be separated into parts in the same way. We add up the parts separately, as if they were separate sums (as shown above), and then put their sums together to get the complete sum.

Examples in Addition.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
211	441	113	612	131	162	351	401
401	552	314	514	261	643	633	243
652	432	162	223	354	540	225	535
143	203	142	635	266	366	864	222

(9)	(10)	(11)	(12)	(13)	(14)	(15)
6135	6654	3652	6765	17386	65432	64371
6246	6165	4327	4321	8126	61628	71628

(16)	(17)	(18)	(19)	(20)	(21)
854612	693165	309651	654800	546511	761549
316549	211899	281980	798831	369409	213650

(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
747	243	672	444	829	916	316	558
131	619	231	315	615	734	815	416
212	817	627	613	899	612	782	615
812	320	170	712	382	817	61	713

(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)
713	608	316	755	307	7103	6500	8432
216	510	825	43	29	217	716	719
504	43	436	2	8	361	32	8006
876	723	99	618	54	5432	765	320
312	61	84	27	62	6154	4163	5461

(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)
843	541	7163	6354	5167	7132	7163	6543
612	800	216	6169	317	216	9542	3721
718	631	512	8006	814	5134	9716	8341
83	716	316	5140	316	6126	8541	9654
514	315	85	3206	8111	7113	8361	3126
62	82	712	8121	2654	8054	8271	7154
712	910	615	316	3099	6091	7654	9132

Examples in Addition.

(46)	(47)	(48)	(49)	(50)	(51)	(52)
86541	73826	65482	81433	71654	88365	216
71321	99981	10093	21650	61326	412	51412
6150	78843	25600	19872	35406	30603	21
235	61720	27310	35418	2000	21	13
8146	3054	51412	21605	31705	6541	6
5190	76312	71609	51400	216	8	5
78840	315.	3146	4161	92	17	4013

1. Find the sum of the even numbers up to 10.
2. Find the sum of the odd numbers up to 11.
3. How many strokes does the clock strike between noon and five minutes past five? How many in 12 hours?
4. How many letters are there in the names, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday?
5. Add together all the numbers less than 23 which have in them a 3 or a 2.
6. From Leeds to Pannel is 15 miles, 6 more to Nidd Bridge, thence to Topcliffe 15, 8 more to Northallerton; how many miles in all?
7. Each of the boys, George, Thomas, William, Henry, Edward, and Frederick, had as many marbles as the letters in his name. How many had they all together?

Add together—

8. Sixty-one, thirty-three, forty-seven, eighteen, and fifty.
9. Twenty-six, twenty-one, nine, thirteen, sixty-one.
10. Thirty-one, forty-five, sixty-seven, eighty-four, nine.
11. Eleven, fourteen, thirty-seven, forty-six, seventy-nine.
12. Thirty, three twenties, forty-five, seventy-five, and six.
13. One hundred and two, thirty-nine, eighty, 71, 62, 43, 105.
14. Two hundred and three, six hundred and five, seven hundred and nine, five hundred and four, three hundred.

Turn to the Exercises in Numeration in pages 23, 24, and add together the numbers in the examples marked C, E, G.

LESSON 20.

ON SUBTRACTION.

If from a number of units of any kind (say marbles) I take away some, and I wish to find how many are left, I can find out by actual counting. But just as Addition is a shorter way of putting together numbers than counting, so Subtraction is a shorter way of finding the difference of numbers than counting would be.

The number to be taken away cannot be greater than that from which it is to be taken.

To take two from six.

We have learnt to know at once that four and two are six. Therefore two from six must leave four.

If this were set as a sum, we should write down the 2 (as shown below) beneath the 6; we should then draw a line, then write the difference 4, and draw a double line.

6	5	4	5	6	6	5	6	7	7	7	8	9	9
2	2	3	1	3	4	4	1	2	3	5	2	1	3
4													

To take five from thirteen.

We have learnt that five and eight are thirteen: therefore five from thirteen must leave eight, as set down.

13
5
8

But remark, that if we began at the units-place, and tried to take 5 from 3, we should find that it could not be done, because 5 is more than 3; but by taking into account the whole number thirteen, we can see that 5 from 13 is 8. Hence we learn that whenever we cannot

take the lower figure from the upper, on account of the lower being the greater, we should proceed to take the lower figure from the teen-number of the upper figure, by which I mean the upper figure increased by ten. This can always be done.

11	13	15	13	11	12	12	11	12	10	12	16	14
2	3	3	6	5	4	5	6	6	7	8	8	9
—	—	—	—	—	—	—	—	—	—	—	—	—

EXERCISE.

Name the teen-numbers of 1, 5, 6, 3, 2, 8, 7, 4, 9, 0.

Run along the numbers in the Exercise Table, Lesson 14, and name their teen-numbers.

Take five from all these numbers in succession, or else from their teen-numbers, according as they are more or less than 5. Then instead of taking 5 from them, take 6, 4, 3, 8.

To take 37 *from* 62.

We cannot take 7 from 2, but we can from its teen-number 12, leaving 5. This supposes that 62 is separated into 50 and 12; so that we should first take 7 units from 12, leaving 5: and then 3 tens from 5, leaving 2 tens: on the whole 25.

Tens.	Units.
62	
37	
25	

But it is found to be an easier rule, instead of diminishing the *upper* figure of the next grade, *after making a teen-number*, to *increase* the *lower* figure of the next grade by 1. For the difference between the two numbers is not altered, if we increase them both by the same number. And this is what we do when we add ten units to the upper number (by making a teen-number), at the same time adding one ten to the lower number.

We can now state the General Rule of Subtraction.

Place the smaller number beneath the larger, so that units are under units, and tens under tens, and so on. Take the lower units-figure from that above it, and write the difference below. If the figures are equal, write 0. If the lower figure be the greater, subtract from the teen-number of the upper, and increase the next lower figure by 1 before you use it. Work with that figure, or with that figure so increased exactly as with the first, and so on to the end.

Example. Subtract 3615 from 8712.

Writing 3615 under 8712, so that all the grades correspond, I begin as if I were going to take 5 from 2, but I see at a glance that this cannot be done; so I call in the teen-number 12. I say, therefore, five from twelve, seven, and I write down 7 in the units-place. Then, remembering the rule, I increase 1 into 2, and say, two from (not one, but) eleven, nine. I write down 9, and as I have again used a teen-number, I say, seven from seven, nought: I write down 0. Then, three from eight, five: I write down 5.

Thousands.	Hundreds.	Tens.	Units.
8	7	1	2
3	6	1	5
5	0	9	7

Reason. The upper number has to give up 5 units, but has only 2 to do it with, till the lower number (as if giving change for a higher coin) gives the upper 10 units for 1 ten: then 5 taken from 12 leaves 7. The lower number has now 2 tens, and we proceed as before.

Examples.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
33	59	48	33	46	86	72	84	91	89
22	37	19	24	27	29	59	37	76	27
—	—	—	—	—	—	—	—	—	—

(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
326	412	506	813	654	783	803	601	500
259	308	317	299	398	399	288	234	137

(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
5431	8643	2431	1001	3050	2040	7103	8051
2870	2785	1889	238	2164	1777	6154	3987

(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
7154	6543	5982	4003	5004	7307	6508	7131
3999	3876	2198	1876	1006	2085	5960	2666

(36)	(37)	(38)	(39)	(40)	(41)	(42)
60001	40031	3670	21731	51432	41654	31236
38246	29876	2165	3187	13167	18976	12998

(43)	(44)	(45)	(46)	(47)	(48)	(49)
46321	50032	41306	31762	54607	93650	47312
29999	28765	20584	29888	48329	36769	20854

(50)	(51)	(52)	(53)	(54)	(55)
612317	376543	4631270	36543	5030060	65432
205483	284310	2854318	21989	2987651	819

(56)	(57)	(58)	(59)	(60)	(61)
706312	31654	514326	83000	65001	71385
81002	99	89999	19988	2432	61412

(62)	(63)	(64)	(65)	(66)	(67)
365481	31654	987632	76543	312678	654321
129804	12984	854319	57832	95430	184116

Examples of Subtraction.

1. What is the excess of 67354 over 21732?
2. Find the difference of 81326 and 719315.
3. What must be added to 9815 to make 10657?
4. From 68357 take 19989.
5. Subtract 314670 from 873254.
6. Thomas Parr was born in 1483 and died in 1635; Henry Jenkins was born in 1501 and died in 1670. Find the difference of their ages at death, supposing the years complete in each case.
7. A boy had 59 marbles in a bag, which had a hole in it. On giving away 12, he found he had 33 only. How many must he have lost?
8. A boy had 41 plums, he gave 9 to one companion and 14 to another, and when he had given some to a third he found he had 7 left. How many did he give to the last?
9. A is 13 years of age, and B is 23, how old will B be when A is 23?
10. Take four thousand and thirty-five from six thousand eight hundred and ninety-six.
11. Find the difference between seven thousand six hundred and fifty-five and nine thousand eight hundred and sixty-four.
12. What number must be added to eighty thousand seven hundred and ninety-five to make up ninety thousand and seventy-one?

LESSON 21.

ON MULTIPLICATION.

How many do three twos make? 2 and 2 and 2. *Six.*

Three tens? *Thirty.*

Those are answers to questions in Multiplication. To multiply a number by another is to find the result of repeating it so many times. Twice 6 means 6 and 6. Three times 6 means 6 and 6 and 6, and in the first case 6 is said to be *multiplied* by 2, in the second by 3. Or we say that 2 (or 3) is the *multiplier*. The multiplier shows the number of times which the given number is to be repeated; and the result of the multiplication is called the *product*.

We can find the product by Addition, for Multiplication is only a short way of doing an Addition sum, in which the numbers to be added are all alike.

Multiply 6 by 2. 6 and 6 are 12. Product, 12.

Multiply 6 by 3. 6 and 6 and 6—18.

Multiply 6 by 5.

I put down 6 five times as an addition sum in the ordinary way and add up. The sum is 30. Therefore 30 is the product of 6 multiplied by 5.

```
 6
 6
 6
 6
 6
---
30
===
```

The products of all numbers up to 12 times 12 can be found in this way, and they are given in a Table called the Multiplication Table, which must now be learnt by heart, a little at a time.

The Multiplication Table.

2 times	3 times	4 times	5 times	6 times	7 times	8 times	9 times	10 times	11 times	12 times
1 2	1 3	1 4	1 5	1 6	1 7	1 8	1 9	1 10	1 11	1 12
2 4	2 6	2 8	2 10	2 12	2 14	2 16	2 18	2 20	2 22	2 24
3 6	3 9	3 12	3 15	3 18	3 21	3 24	3 27	3 30	3 33	3 36
4 8	4 12	4 16	4 20	4 24	4 28	4 32	4 36	4 40	4 44	4 48
5 10	5 15	5 20	5 25	5 30	5 35	5 40	5 45	5 50	5 55	5 60
6 12	6 18	6 24	6 30	6 36	6 42	6 48	6 54	6 60	6 66	6 72
7 14	7 21	7 28	7 35	7 42	7 49	7 56	7 63	7 70	7 77	7 84
8 16	8 24	8 32	8 40	8 48	8 56	8 64	8 72	8 80	8 88	8 96
9 18	9 27	9 36	9 45	9 54	9 63	9 72	9 81	9 90	9 99	9 108
10 20	10 30	10 40	10 50	10 60	10 70	10 80	10 90	10 100	10 110	10 120
11 22	11 33	11 44	11 55	11 66	11 77	11 88	11 99	11 110	11 121	11 132
12 24	12 36	12 48	12 60	12 72	12 84	12 96	12 108	12 120	12 132	12 144

Read the first column:—Twice 1, 2; twice 2, 4; twice 3, 6; and so on, which is the FIRST ORDER of saying the Multiplication Table. It should also be said thus, which is the SECOND ORDER: once 2, 2; twice 2, 4; 3 times 2, 6; 4 times 2, 8; and so on: once 3, 3; twice 3, 6; 3 times 3, 9; 4 times 3, 12; and so on.

The Multiplication Table being thoroughly known for units (or part of it), let it be said for tens, thus: Twice ten, twenty; twice twenty, forty; and so on. Afterwards it may be said for hundreds.

EXERCISES.

Take a row of figures, as in Exercise Table, Lesson 14, and making any number (as the first in the row) a multiplier, run along the row as fast as possible, saying only the products. No other word should be uttered. Then take another multiplier.

[For a class use figures on cards.]

LESSON 22.

MULTIPLICATION BY A SINGLE FIGURE.

What is twice twenty-two? *It is twice twenty and twice two, that is, it is forty and four. Forty-four.*

Twice twenty-six? *Twice twenty and twice six; or, forty and twelve. Fifty-two.*

What is 3 times 23? 4 times 31? 5 times 29?

[In multiplying such numbers mentally it will be found best to begin at the tens.]

To multiply 364 by 3.

We may call to mind that we can always perform Multiplication by Addition, if the number of repetitions be not very large.

Placing the numbers as for an Addition sum, we should first add up the units; this would give us three 4's, or 12, just the same result as we should get by multiplying 4 by 3. We put down 2 according to the rule, and carry 1 to the tens. We have now to add up the three 6's, or we might get the result from the Multiplication Table, 3 times 6, 18, and 1 (the number carried) 19. Set down 9, and carry 1. We get 9 by adding up the three 3's, or at once by the Multiplication Table, 3 times 3, 9, and 1, 10, which we set down.

Hundreds.	Tens.	Units.
3	6	4
3	6	4
3	6	4
1	0	9	2

Thus we can find each step by Multiplication, without making a long Addition: and we carry exactly as in Addition.

364	
3	
1092	

Multiply 3412 by 4.

3412
4
13648

Write down 3412, and the multiplier 4 under the units. Draw a line. Begin at the units. 4 times 2, 8. Write down 8 in the units-place. Now multiply the tens. 4 times 1, 4. Set down 4 in the tens-place. 4 times 4, 16: set down 6 in the hundreds-place, and carry 1 to the thousands: 4 times 3, 12, and 1, 13. Set down 13. Read the product:—Thirteen thousand, six hundred, and forty-eight.

Examples.

(1)	(2)	(3)	(4)	(5)	(6)
314	343	4123	42403	31324	43034
2	2	2	2	2	2

Multiply (7) (8) (9) (10) (11) (12) (13)
By 2—43405, 44235, 34254, 45306, 43565, 46537, 46735,

(14) (15) (16) (17) (18) (19) (20)
56738, 65778, 67809, 65389, 73899, 83791, 509809.

(21) (22) (23) (24) (25) (26) (27) (28) (29)
By 3—22, 32, 413, 514, 605, 3127, 4108, 3527, 4378,

(30) (31) (32) (33) (34) (35) (36)
5679, 5789, 67293, 79365, 89365, 87006, 80913,

(37) (38) (39) (40)
91835, 98705, 95432, 95431.

(41) (42) (43) (44) (45) (46) (47) (48) (49)
By 4—221, 323, 234, 341, 432, 441, 445, 436, 463,

(50) (51) (52) (53) (54) (55) (56)
3645, 3657, 5732, 5638, 5748, 5408, 57089,

(57) (58) (59) (60)
57869, 58963, 50995, 89876.

(61) (62) (63) (64) (65) (66) (67) (68) (69)
By 5—213, 314, 416, 625, 706, 826, 936, 846, 517,

(70) (71) (72) (73) (74) (75) (76) (77)
627, 672, 781, 579, 6779, 979, 48932, 53894,

(78) (79) (80)
60906, 70984, 819323.

(81) (82) (83) (84) (85) (86) (87) (88) (89)
By 6—313, 412, 513, 435, 516, 416, 567, 672, 763,

(90) (91) (92) (93) (94) (95) (96)
768, 7081, 7283, 6549, 6593, 8914, 8993,

(97) (98) (99) (100)
9887, 98073, 39865, 48096.

(101) (102) (103) (104) (105) (106) (107) (108)
By 7—423, 352, 416, 463, 427, 473, 538, 608,

(109) (110) (111) (112) (113)
7182, 8219, 8293, 98763, 97906.

(114) (115) (116) (117) (118) (119)
By 8, then by 9, 11, 12—343, 453, 506, 516, 607, 727.

(120) (121) (122) (123) (124) (125) (126)
182, 3828, 4819, 5392, 6293, 7294, 89237,

(127) (128) (129) (130) (131) (132)
79937, 89103, 346908, 49932, 365149, 465093.

† Numeration. A thousand thousands is called a million.

One million is written 1,000,000.

Two millions are written 2,000,000.

Six figures always follow the millions.

Multiply 324225 by 2, 3, 4, 5.
Multiply 2132123 by 2, 3, 4, 5, 6, 7.
Multiply 3241245 by 2, 3, 4, 5, 6, 7.
Multiply 1324526 by 2, 3, 4, 5, 6, 7.
Multiply 1452367 by 2, 3, 4, 5, 6, 7, 8.
Multiply 2435768 by 2, 3, 4, 5, 6, 7, 8, 9, 10.
Multiply 35769 by 3, 4, 5, 6, 7, 8, 9, 11, 12.
Multiply 46829 by 4, 5, 6, 7, 8, 9, 11, 12.
Multiply 5893276 by 4, 5, 6, 7, 8, 9, 11, 12.
Multiply 8937023 by 4, 5, 6, 7, 8, 9, 11, 12.
Multiply 9807236 by 4, 5, 6, 7, 8, 9, 11, 12.

[Often prove the results by Addition.]

LESSON 23.

MULTIPLICATION BY TENS.

What is 10 times 3? 30.

10 times 9? 90.

10 times 11? 110?

Then to multiply a number by 10 you need only write a 0 after the units-figure.

What is 10 times 33? 330.

What is 10 times 275? 2750.

Reason. By adding 0 we make the units-figure stand for tens, the tens for hundreds, and so on; each figure being increased in value 10 times.

To multiply by 20, 30, 40, multiply by 2, 3, 4, and write 0 after the units-figure.

To multiply by 200, 300, 400, multiply by 2, 3, 4, and write two 0's after the units-figure.

To multiply by 2000, 3000, 4000, multiply by 2, 3, 4, and write three 0's after the units-figure. And so on.

Multiply 3614, 4135, 21782, by 10.
Multiply 263, 312, 413, 514, 642, 715, 689, by 20.
Multiply 4638 by 20, 30, 40, 60, 70, 80, 90.
Multiply 5643 by 20, 30, 40, 50, 60, 70, 80, 90.
Multiply 64938 by 40, 50, 60, 70, 80, 90.
Multiply 783 by 200, 300, 400, 600.
Multiply 81469 by 200, 300, 500, 700, 800, 900.
Multiply 7136 by 100, 1100, 1200.
Multiply 81643 by 300, 1100, 1200.
Multiply 7546 by 1000, 3000, 5000, 6000.

LESSON 24.

MULTIPLICATION BY COMPOSITE NUMBERS.

To multiply by any number which is found in the Multiplication Table.

Every number above 12 which is found in the Multiplication Table is the product of two numbers. Multiply by one of these, and the product so found by the other. The result will be the desired product.

Thus to multiply by 8 is the same as to multiply by 4 and again by 2; to multiply by 12 is the same as to multiply by 3 and again by 4. Try this—

87	87	87	87
4	8	4	12
348	696	348	1044
2		3	
696		1044	

[To make the reason of this clear, place 3 counters or beads on each of 4 squares of the Chequer-board in a row and below them another similar row. Since there are two rows of 4 squares, the whole number of squares is twice four, and there are three times twice four counters; since there are three on every square. But if we take all the squares in one line, we have eight, and the whole number is clearly 3 times 8. Illustrate some other instances in the same way.]

Multiply 3651 by 24, also by 35, 81, 36, 27, 45.
Multiply 7123 by 63, also 84, 72, 21, 18, 42, 27, 56.
Multiply 24163 by 84, 96, 28, 32, 66, 54, 108.
Multiply 36543 by 33, 48, 96, 21, 16, 84, 132.

LESSON 25.

ON DIVISION.

How many twos are there in 4? *Two.* In 6? *Three.*

How many tens in 20? *Two.*

These are answers to questions in Division.

Division is the method of finding how often one number is contained in another.

We learn from the Multiplication Table how often the earlier numbers are contained in certain others.

Repeat the first column of the Multiplication Table.

What did you say last? Twice what number is 24? *Twice twelve.*

How often then is two contained in 24? *Twelve times.*

And in 22? *Eleven times.*

How often in 23? *Eleven times and one over.*

Two is here said to be the divisor. If the number itself does not occur in the Table, we must consider what is the number next below it which does.

How often is two contained in 21? *Ten times and one over.* In 20? *Ten times.*

The number to be divided is called 'the dividend.' The number which expresses how often the divisor is contained in it is called 'the quotient.' Dividing 22 by 2, what is the quotient? 11.

Dividing 8? 4. Dividing 7? 3 and 1 over.

Dividing 2? 1. Dividing 1? Nought and 1 over.

Now go down the column again, and afterwards the three-column, and so on in the same way, turning all the multiplications into divisions.

LESSON 26.

SHORT DIVISION.

Let it be required to divide 324 by 4.

We place the divisor 4 in the same line as the number (or dividend), marking it off by a curved line and drawing a straight line beneath the number. We then proceed as follows.

Hundreds. Tens. Units.

4) 3 2 4

8 1

The first or leading figure is 3, meaning 3 hundreds. 4 is not contained in 3; we go on therefore to the tens, considering the two first figures 32 as 32 tens; 4 in 32 is contained 8 times, which will mean 8 tens, because they are tens which we are dividing. We write it therefore in the tens-p'ace. Next, 4 in 4 units, once. We place a 1 under the units, and draw a double line. 81 is the quotient. It shows how many times 4 is contained in 324. If now we multiply 81 by 4, we shall reproduce the number 324, and so prove the work correct.

EXAMPLES.

2) 482	2) 126	3) 126	3) 156	3) 1869	3) 2469
4) 824	6) 366	3) 9639	5) 2515	7) 2107	8) 1688

Hitherto there has been no *over*, or remainder in dividing. More frequently we shall have an *over* at every step.

Thousands. Hundreds. Tens. Units.

7) 3654

522

To divide 3654 by 7.

Here 7 is contained in 36 hundreds 5 times and 1 over: the 5 means 5 hundreds, which we therefore set down in the hundreds-place: we now consider the 1 hundred over as 10 tens, and take it with the next figure, making 15 tens, in which 7 is contained twice, with 1 over: we write down 2, and taking the 1 ten with the next figure, we have 14 units, in which 7 is contained twice. We write down 2, and draw a double line. The quotient is five hundred and twenty-two.

Beads. Beads.

9) 74315 — 2 over.

8257

To divide 74315 by 9.

Here 9 is contained in 74 thousands 8 times, with 2 over: in 23 hundreds, 2 times, with 5 over: in 51 tens, 5 times, with 6 over: in 65 units, 7 times, and 2 over. The 2 ought to be placed in the same line at the end of a dash, because it is a number of the same kind as the original number. If we suppose the number to mean so many beads, they may be divided into 8257 heaps of 9 beads each, with 2 beads over. Or we may denote the *over* thus, writing it in the lower line, but separating it off by two nicks („). A figure so marked off is understood to be of the same unit as that in the previous line.

9) 74315

8257 „ 2

4) 36132

9033

If at any time the divisor is not contained even once, place a 0, and carry forward the *over*. See Example.

Examples.

2)34 2)46 2)532 2)678 2)3642 3)639 3)612

Divide	(1)	(2)	(3)	(4)	(5)	(6)
By 2—	3462,	41532,	51674,	81268,	94364,	21670.
	(7)	(8)	(9)	(10)	(11)	(12) (13)
By 3—	31671,	54363,	711012,	81492,	37650,	20001, 10002.
	(14)	(15)	(16)	(17)	(18)	(19) (20)
By 4—	624,	7128,	8900,	30064,	70032,	18116, 36728.
	(21)	(22)	(23)	(24)	(25)	(26) (27)
By 5—	365,	7125,	8435,	90005,	36055,	71235, 81255.
	(28)	(29)	(30)	(31)	(32)	(33)
By 6—	4632,	87126,	33006,	86472,	54696,	71334.
	(34)	(35)	(36)	(37)	(38)	(39)
By 7—	6545,	8435,	7679,	56273,	416143,	51114.
	(40)	(41)	(42)	(43)	(44)	
By 8—	7168,	3664,	71360,	71792,	999888.	
	(45)	(46)	(47)	(48)	(49)	
By 9—	369,	2133,	233622,	118134,	4313709.	
	(50)	(51)	(52)	(53)	(54)	
By 11—	3652,	2134,	61545,	79365,	2136541.	
	(55)	(56)	(57)	(58)	(59)	
By 12—	888,	3768,	54072,	33336,	100044.	

How do you divide by 10?

Divide 270 by 3, 4, 5, 6, 7, 8, 9, 10.
Divide 384 by 4, 6, 7, 8, 9, 10, 11, 12.
Divide 4626 by 9, 3, 12, 7, 8, 11, 10.
Divide 7321 by 9, 7, 8, 11, 12.
Divide 6143 by 2, 3, 4, 5, 6, 7, 8, 9, 11, 12.
Divide 867163 by 2, 3, 4, 5, 6, 7, 8, 9, 11, 12.
Divide 81543 by 2, 3, 4, 6, 7, 8, 9, 11, 12.

In all cases showing the remainder or *over*, when there is one.

LESSON 27.

CONTINUED SHORT DIVISION.

To divide by any number which is found in the Multiplication Table.

The number (if above 12) will be a product of two numbers. Divide by one of them, and then divide the quotient by the other. Thus, to divide by 25, we may divide by 5, and then divide the quotient by 5.

Reason. We have seen that to multiply by the two numbers separately is the same as to multiply by their product. By dividing by the two numbers separately we simply undo the work of Multiplication.

Divide the following numbers by the divisors named.

1. 220860 by 36.
2. 156882 by 22.
3. 197316 by 54.
4. 59211 by 81.
5. 31948 by 49.
6. 8713260 by 90.
7. 3236373 by 63.
8. 2325625 by 25.
9. 2985984 by 32.
10. 2143296 by 36.
11. 14561856 by 16.
12. 1500625 by 49.
13. 2371600 by 121.
14. 450240 by 35.
15. 4122272 by 56.
16. 2663424 by 144.
17. 1871424 by 72.
18. 1999382 by 77.
19. 1602756 by 36.
20. 1723887 by 121.

Oral Exercise.

A number of figures being placed in a row, as 3124365, practise Division by taking any number (say 7) and running along the row, as if dividing the number, naming the quotients aloud. Say only four, four, six, and so on. Use Exercise Table, Lesson 14, or figure cards.

LESSON 28.

MULTIPLICATION (GENERAL).

Rule. Write the multiplier under the number to be multiplied (which is called the multiplicand), so that units are under units, tens under tens, and draw a line beneath. Multiply by the figure in the units-place as if it were the only figure. Multiply by the next figure as if it were the only figure, only that in writing down the result beneath the other you are to begin to set down the result *directly under the figure by which you are multiplying*, and so on throughout. When you have multiplied by all the figures of the multiplier, draw a line and add up as in Addition. The sum will be the required product.

Example. Multiply 307 by 89. I place 89 under 307 so that 9 is under 7 and 8 under the 0 of the tens-place. I multiply by 9 as usual and then by 8, beginning, 8 times 7, 56; I write the 6 under the 8 of the multiplier. I then add up, and find the product 27,323.

Tens of Thousands.	Thousands.	Hundreds.	Tens.	Units.
		3	0	7
			8	9
		2	7	6
	2	4	5	6
2	7	3	2	3

Reason. It is the same thing to take 307 nine times and then eighty times, and then put the results together as to take 307 eighty-nine times.

Now the first line of multiplication is 9 times, and the second line is 80 times, for that is the same as 8 times followed by a 0; the 0 serves to keep the figures in their right place, and if we are careful to place the figures according to the rule the 0 may be left out.

307	
89	
2763	9 times.
24560	80 times.
27323	89 times.

Examples.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
224	312	423	514	613	635	656
22	23	14	34	13	35	46

(8)	(9)	(10)	(11)	(12)	(13)	(14)
316	615	723	814	953	873	632
51	17	19	29	39	28	38

(15)	(16)	(17)	(18)	(19)	(20)
514	2116	6150	8162	6067	3987
31	73	34	49	89	91

Special case. Case of a multiplier containing noughts between other figures.

Rule. Pass over the noughts, and go on to the next figure of the multiplier, only taking care to write the right-hand figure of the product under that figure.

654
107
4578
654
69978

Example. To multiply 654 by 107. After multiplying by 7 I pass over the nought, and multiply by 1, taking care to place the 4 under the 1.

Reason. The 0 only serves to keep the 1 in the hundreds-place, and its proper effect is given to it by writing down the 4 underneath the 1, wherever it is.

365
43
1095
1460
15695

Caution. If any product ends in a nought, take care to set that nought down, just as if it were any other figure, under the figure by which you are multiplying.

Example. Multiply 365 by 43.

Examples.

Multiply the following numbers by the multipliers named.

1. 2111 by 23.
2. 3134 by 34.
3. 4126 by 43.
4. 6135 by 31.
5. 6234 by 26.
6. 3426 by 41.
7. 5135 by 53.
8. 6127 by 43.
9. 7163 by 44.
10. 8179 by 55.
11. 7189 by 46.
12. 8432 by 85.
13. 4578 by 37.
14. 7385 by 73.
15. 6543 by 68.
16. 5084 by 77.
17. 7340 by 36.
18. 6054 by 92.
19. 7154 by 75.
20. 8432 by 99.
21. 7008 by 76.
22. 6504 by 93.
23. 5431 by 37.
24. 9080 by 84.
25. 31213 by 97.
26. 40134 by 27.
27. 51362 by 25.
28. 61407 by 31.
29. 70035 by 29.
30. 61432 by 56.
31. 71384 by 49.
32. 61543 by 54.
33. 71349 by 69.
34. 65412 by 87.
35. 71384 by 46.
36. 81432 by 45.
37. 43656 by 47.
38. 58909 by 69.
39. 73404 by 89.
40. 59431 by 78.
41. 65401 by 66.
42. 73182 by 27.
43. 84316 by 47.
44. 71342 by 53.
45. 61501 by 69.
46. 81231 by 76.
47. 36542 by 36.
48. 81011 by 77.
49. 46543 by 218.
50. 71030 by 371.
51. 65431 by 701.
52. 78101 by 326.
53. 80036 by 809.
54. 91560 by 713.
55. 10113 by 999.
56. 85407 by 809.
57. 91132 by 916.
58. 84071 by 625.
59. 54317 by 815.
60. 91514 by 209.
61. 10037 by 978.
62. 84102 by 854.
63. 76304 by 278.
64. 81436 by 1111.
65. 72345 by 1236.
66. 81012 by 1301.
67. 84160 by 1210.
68. 36541 by 3140.
69. 71230 by 2121.
70. 80401 by 3101.
71. 21631 by 2171.
72. 81201 by 3007.

Multiply the numbers in E and G, Lesson 17, by twenty-three, and by seven hundred and ninety-six.

[The examples must constantly be dictated in words, not by figures, and the scholar must be required to read off the results in words.]

52200

LESSON 29.

LONG DIVISION.

To divide by any number.

Division is the process of undoing a Multiplication, so as to discover what the figures are which would multiply the divisor so as to give the dividend.

```
  89
 317
 ---
 623
  89
 267
 ---
89 ) 28213 ( 317
     267
     ---
     151
      89
     ---
      623
      623
     ---
       **
     ===
```

Multiply 89 by 317 and make the product 28213 a dividend, placing 89 for divisor before the dividend, and marking it off by a curved line, and placing another curved line after the dividend to receive the quotient.

We find the first figure 3 by trying how often 8, the first figure of the divisor, is contained in the first figures of the dividend. 8 is contained in 28 three times. Place 3 in the quotient and multiply 89 by 3, placing 267 the product beneath the leading figures of the dividend. Subtract and write down the difference 15: bring down the next figure 1 from the dividend. For the next figure of the quotient use 8 again as a trial figure—8 in 15, 1. Write 1 in the quotient and multiply the divisor by 1, placing the product 89 under 151. Subtract and bring down the next figure 3 of the dividend. 8 in 62, 7. Write 7 in the quotient—the product is 623, which leaves no remainder, and the quotient is complete and exact.

We have thus withdrawn step by step 267, 89, 623, exactly the numbers which appear in the process of

Multiplication. The 267 is in reality 26700, but the place of the figures being preserved, it is not necessary to supply the o's.

It is to be observed that in using the first figure of the divisor for a trial divisor we may get a figure for the quotient figure which is too large. We often do so. If we find on Multiplication that the product is greater than the number from which it is to be subtracted, we must take a smaller quotient-figure.

Examples.

Divide the following numbers by the divisors named.

1. 676 by 13.
2. 867 by 17.
3. 1058 by 23.
4. 1444 by 19.
5. 1352 by 26.
6. 2352 by 28.
7. 1073 by 29.
8. 1092 by 28.
9. 1178 by 31.
10. 1053 by 39.
11. 3362 by 41.
12. 1892 by 43.
13. 2256 by 47.
14. 2964 by 38.
15. 3876 by 51.
16. 8586 by 53.
17. 10816 by 52.
18. 9519 by 57.
19. 18585 by 59.
20. 9911 by 53.
21. 4394 by 13.
22. 3969 by 63.
23. 3293 by 89.
24. 2607 by 79.
25. 85184 by 88.
26. 61731 by 57.
27. 103823 by 47.
28. 50653 by 37.
29. 78608 by 68.
30. 29791 by 31.
31. 715822 by 71.
32. 275684 by 82.
33. 65219 by 77.
34. 35721 by 63.
35. 195112 by 116.
36. 614125 by 85.
37. 148877 by 53.
38. 328050 by 81.
39. 571787 by 83.
40. 397620 by 141.
41. 612730 by 710.
42. 6346590 by 890.
43. 5963370 by 730.
44. 512616 by 312.
45. 2005216 by 281.
46. 954513 by 973.
47. 221516 by 316.
48. 797847 by 713.
49. 143007 by 219.
50. 580992 by 816.
51. 146985 by 615.
52. 311691 by 321.
53. 293095 by 365.
54. 475524 by 612.
55. 38313 by 387.
56. 7520600 by 620.
57. 431649 by 657.
58. 547058 by 523.
59. 938961 by 969.
60. 301467 by 317.

Exercise Table. B.

[a]5643	206	[b]317	218	[c]7164	300	[d]712
816	[e]2178	501	[f]26	856	[g]4131	2161
[h]2006	659	[i]899	3641	219	817	[k]655
719	[l]9999	261	[m]877	4114	[n]7316	8111
4658	8332	716	7581	222	1884	1009
[o]305	9006	[p]25	4	[q]8318	374	[r]62
472	3339	7181	5545	210	6000	75
5641	[s]2365	6417	3254	613	8712	2988
71	365	8119	[t]27	5716	342	20
4041	91	265	8462	317	[u]6540	811
[v]99	8888	55	7060	2080	3650	7130
6005	317	[w]488	777	7064	951	3811
4327	[x]22325	661503	271600	321	814625	821665
5401	641202	[y]72341	812346	570	123203	501201
[z]3105	136541	206541	154112	619	300614	820114

This Table is intended to be used thus. Direct the scholar to begin at the number marked (b) or (e), and to take down six or ten numbers in succession and add them together. In a class every scholar should begin at a different letter. By varying the directions many hundred sums may thus be set. It will serve, of course, also for Multiplication, &c.

1. Find the difference between the sum of the numbers in the top row and those in the second row.

2. Multiply together the numbers marked a and b, e and h, q and u, x and z.

LESSON 30.

ON ENGLISH MONEY, 1872.

The commonest names in reckoning money are Pounds, Shillings, and Pence. Learn by heart:—

Twelve pence one shilling: twenty shillings one pound. Written—12*d.* 1*s.* 20*s.* £1.

Say the twelves-column of the Multiplication Table, in the second order of saying it, as below, and the following Tables, derived from it.

Once		12,	12	One shilling		12	pence.	*d.*	*s.*	*d.* *s.*	*d.*
2	times	12,	24	2	shillings	24	„	12	1	13 1 and	1
3	„	12,	36	3	„	36	„	24	2	14 1 „	2
4	„	12,	48	4	„	48	„	36	3	15 1 „	3
5	„	12,	60	5	„	60	„	48	4	and so on.	
6	„	12,	72	6	„	72	„	60	5	25 2 and	1
7	„	12,	84	7	„	84	„	72	6	26 2 „	2
8	„	12,	96	8	„	96	„	84	7	and so on up	
9	„	12,	108	9	„	108	„	96	8	to 150*d.*	
10	„	12,	120	10	„	120	„	108	9		
11	„	12,	132	11	„	132	„	120	10		
12	„	12,	144	12	„	144	„	132	11		
								144	12		

These are to help you to say quickly how many times 12 is contained in any number you are likely to meet with, and what is the over: but in order to do this easily you must practise it. Turn to Exercise Table A, Lesson 14, and take any two figures in succession to stand for a number of pence. Run along the line as fast as you can, saying how many shillings and pence they make. Say only—4 and 5: 3: 5 and 5, and so on.

Add up the following:—

Measure 12	12	12	12	12	12
s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
7	5	9	7	4	11
6	4	11	6	3	11
5	9	11	5	11	10
4	7	10	9	10	9
3	6	6	11	9	8
2 1					

Write the measure (12) above the pence-column, to remind you that instead of carrying 1 for every ten, you now carry 1 for every 12 to the next name, shillings. In the first Example I add up and find the sum 25; which is 2 twelves and 1 over; or 2*s.* 1*d.* I write 1 in the pence column and 2 in the shillings.

LESSON 31.

ADDING SHILLINGS AND POUNDS.

Say how many twos there are in the following numbers and how many over:—In 2, 3, 4, 5, up to 24.

Next, to say how many twenties there are in any number, as in 37, we divide the tens-figure by 2, and join the 1 over, when there is one, with the units-figure. Thus, twenties in 37, 1 and 17 over; since 3 divided by 2 gives 1, and 1 over, which we join with the 7, making 17 over. For practice, see Exercise Table A.

How many 20's in the following, and how many over?

In 37, 57, 43, 60, 75, 36, 72, 81, 93, 115, 120.

Say only—One, seventeen; two, seventeen; and so on, but think of them as *pounds* and *shillings*.

It is necessary to be able to turn shillings into pounds thus, but in actually adding up shillings, if there are two columns, add up the first column first, set down the units, and carry as in common addition, then add up the second column: ask yourself how many two's there are in the sum, and carry them to the pounds: if there is 1 over, put it down in the tens-place of shillings.

If there are shillings and pence, remember to add in the shillings carried from the pence-column.

Add up the following:—

Measure 20		20		20	12		20	12		20	12
£	*s.*	£	*s.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
	15		14		12	6		13	3		3	2
	11		13		13	5		6	3		18	11
	9		6		11	8		2	7		9	10
	3		15		17	3		8	5		19	5
	8		13		16	5		9	7		17	3
	5		11		10	3		19	6		12	4
2	11			4	1	6						

In the first Example, adding up the units-place of shillings, I find 31; I put down 1, and carry 3; adding I find 5 (tens), which divided by 2 (for twenties) gives 2 and 1 over: I put down the 1 in the tens-place of shillings and carry 2 to the pounds. Pounds are added up like any common numbers.

LESSON 32.

ON FARTHINGS.

[If there is any difficulty felt about the farthings, as fractions, Lessons 36, 37 must be brought in here.]

There are four farthings in one penny: they are written thus:—

1 farthing, $\frac{1}{4}d.$ 2 farthings, $\frac{1}{2}d.$ 3 farthings, $\frac{3}{4}d.$

$\frac{1}{2}d.$ is called a halfpenny, but must be thought of in sums as two farthings.

Read the following row of farthings: $\frac{1}{4}$, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$.

Again, read them thus, omitting the word farthings: 1, 2, 2, 3, and so on; and now their sums, thus, one, three, five, eight, ... in all 27 farthings. Dividing by 4 we get 6 pence and 3 over, or $6\frac{3}{4}d.$

Practise dividing by 4 and naming the overs. Exercise Table A, Lesson 14.

Examples.

(1)	(2)			(3)			(4)		
Measure 4		20	12 4		20	12 4		20	12 4
d.	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
$\frac{1}{4}$		3	6 $\frac{1}{4}$	1	3	2 $\frac{1}{4}$	16	2	9 $\frac{1}{4}$
$\frac{1}{2}$		5	3 $\frac{1}{4}$	1	6	5 $\frac{1}{2}$	71	3	2 $\frac{1}{2}$
$\frac{3}{4}$		4	6 $\frac{1}{2}$	2	3	8 $\frac{1}{4}$	54	1	6 $\frac{3}{4}$
$\frac{1}{2}$		12	9 $\frac{1}{4}$	1	6	3 $\frac{1}{2}$	90	0	10 $\frac{1}{4}$
$\frac{1}{2}$		3	8 $\frac{1}{2}$	2	8	5 $\frac{3}{4}$	17	11	0 $\frac{3}{4}$
2 $\frac{1}{2}$	1	9	9 $\frac{3}{4}$	8	8	1 $\frac{1}{4}$	248	19	5 $\frac{1}{2}$

(1)	(2)	(3)	(4)	(5)
d.	*d.*	*d.*	*d.*	*d.*
1	2	3	5	7
2	8	5	6	8
3	4	6	9	11

(6)		(7)		(8)	
s.	*d.*	*s.*	*d.*	*s.*	*d.*
1	2	3	2	4	1
2	1	4	1	2	3
3	2	6	6	3	11

(9)		(10)		(11)		(12)		(13)		(14)	
s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
1	6	3	5	4	11	15	3	16	11	17	6
2	3	4	11	5	3	16	2	17	4	6	0
4	6	17	3	6	4	17	6	18	2	8	4
11	3	18	2	17	2	13	9	16	3	10	0

(15)		(16)		(17)		(18)		(19)		(20)	
s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
16	8	17	2	16	4	1	2	2	1	3	1
14	3	3	6	15	1	2	0	3	2	4	2
2	6	4	5	13	11	3	$0\frac{1}{4}$	4	$1\frac{1}{2}$	3	$6\frac{1}{4}$
5	0	6	1	9	6	4	$0\frac{3}{4}$	6	$0\frac{1}{2}$	7	$0\frac{1}{2}$

(21)		(22)		(23)		(24)		(25)		
s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	£	*s.*	*d.*
17	$8\frac{1}{4}$	18	6	15	$6\frac{1}{4}$	6	$9\frac{3}{4}$	1	6	2
18	$9\frac{1}{2}$	2	$3\frac{1}{4}$	3	$2\frac{1}{4}$	8	3	2	3	1
9	$6\frac{3}{4}$	3	$6\frac{1}{4}$	5	$6\frac{1}{2}$	9	$6\frac{1}{4}$	3	11	4
5	$4\frac{1}{3}$	4	$1\frac{1}{2}$	7	$3\frac{1}{3}$	10	$11\frac{3}{4}$	5	6	$0\frac{1}{4}$
8	$1\frac{1}{4}$	6	$3\frac{3}{4}$	8	$1\frac{3}{4}$	5	8	6	1	$0\frac{1}{2}$

(26)			(27)			(28)			(29)		
£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
8	6	$4\frac{1}{4}$	11	3	$2\frac{1}{4}$	23	16	5	47	8	$3\frac{1}{4}$
7	1	$2\frac{3}{4}$	21	3	$6\frac{1}{2}$	36	5	$4\frac{1}{2}$	81	6	$4\frac{3}{4}$
9	11	11	34	6	3	14	0	8	95	7	3
8	10	$3\frac{3}{4}$	3	7	$8\frac{3}{4}$	41	6	$0\frac{3}{4}$	73	14	$6\frac{1}{2}$
6	5	$4\frac{1}{2}$	21	8	4	74	2	$0\frac{3}{4}$	81	10	$2\frac{1}{2}$

(30)

£	s.	d.
71	3	$6\frac{3}{4}$
41	2	$8\frac{3}{4}$
9	8	$5\frac{1}{2}$
23	6	$4\frac{3}{4}$
37	5	$4\frac{1}{4}$

(31)

£	s.	d.
81	0	$0\frac{1}{2}$
6	5	4
3	15	$2\frac{1}{4}$
7	10	3
8	14	6

(32)

£	s.	d.
310	6	$5\frac{1}{4}$
406	3	2
27	6	$5\frac{1}{2}$
84	1	$7\frac{3}{4}$
191	6	2

(33)

£	s.	d.
416	3	$2\frac{3}{4}$
516	4	$8\frac{1}{4}$
31	9	$3\frac{1}{2}$
26	7	$4\frac{1}{2}$
185	3	6

(34)

£	s.	d.
713	8	$6\frac{1}{4}$
410	6	0
735	18	$4\frac{3}{4}$
86	0	$0\frac{1}{2}$
714	1	1

(35)

£	s.	d.
156	3	$2\frac{1}{2}$
413	6	5
718	9	$2\frac{3}{4}$
901	6	5
31	4	$0\frac{1}{2}$

(36)

£	s.	d.
718	2	11
999	3	$1\frac{1}{2}$
803	6	$0\frac{3}{4}$
915	2	1
604	4	10

(37)

£	s.	d.
4163	2	$7\frac{1}{2}$
2003	1	6
498	7	$5\frac{1}{4}$
513	17	$2\frac{1}{4}$
4167	3	8

LESSON 33.

SUBTRACTION OF MONEY.

Subtraction of Money differs from Common Subtraction in respect of the manner in which we pass from one 'name' or denomination to another, since the measures are no longer ten for every grade, but 4 for farthings, 12 for pence, and 20 for shillings.

	20	12	4
£.	s.	d.	
71	6	5	$\frac{1}{4}$
2	11	9	$\frac{3}{4}$
68	14	7	$\frac{1}{2}$

The difference will be best explained by an example.

I cannot take $\frac{3}{4}$ from $\frac{1}{4}$; I must therefore increase $\frac{1}{4}$ by adding to it a unit of the next higher name (in the form of four farthings), adding at the same time the same value (as 1*d.*) to the pence of the lower

number, which will not affect the *difference* between the two numbers. It is in fact exactly what happens, when one man has to give another change, 4 farthings for 1*d.*, in order to help him to settle an account. There are now 5 farthings, from which when 3 are taken 2 farthings remain. Set down $\frac{1}{2}$.

Passing to the pence, we remember that 9 has been increased to 10; 10 from 5 we cannot take, but 10 from 5 increased by 1 measure, that is, from 17, leaves 7d. Set it down. Having brought in a measure, 11 must be increased to 12; 12 from 6 we cannot, but taken from 6 and 20, or from 26, it leaves 14: the pounds must be increased by 1, leaving 68.

(1)		(2)			(3)			(4)		
	12		20	12		20	12 4		20	12 4
s.	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
5	6	10	2	6	21	3	9 $\frac{3}{4}$	85	19	7 $\frac{1}{2}$
3	4	3	1	4	11	2	7 $\frac{1}{2}$	76	13	8 $\frac{3}{4}$

(5)			(6)			(7)			(8)		
£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
80	0	6$\frac{1}{4}$	71	2	11$\frac{3}{4}$	35	6	2$\frac{1}{2}$	21	3	2
59	19	7$\frac{3}{4}$	16	5	4$\frac{1}{2}$	21	3	6	6	1	5$\frac{3}{4}$

(9)			(10)			(11)			(12)		
£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
713	2	6	814	6	2	517	2	6$\frac{1}{4}$	416	7	2$\frac{1}{4}$
129	6	9	293	7	11$\frac{1}{4}$	28	3	10$\frac{1}{2}$	388	0	8

(13)			(14)			(15)			(16)		
£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
1615	2	6	7132	6	5	1143	6	3$\frac{1}{4}$	7139	11	2$\frac{1}{4}$
314	3	2	814	2	4$\frac{1}{4}$	1049	3	9	4166	16	6$\frac{3}{4}$

LESSON 34.

MULTIPLICATION OF MONEY.

Multiplication of Money only differs from Common Multiplication in the manner in which you carry from one name (or denomination) to another, and this you have already learnt in Addition of Money.

	20	12	4
£	s.	d.	
316	2	3	½
		6	
1896	13	9	

It is usual to write the multiplier under the pence.

Six times 2 farthings, 12 farthings, or 3*d.* Six times 3, 18, and 3, 21*d.* or 1*s.* 9*d.*: set down 9 and carry 1 to the shillings. Six times 2, 12, and 1, 13*s.*: set it down and multiply the pounds as any common number.

	20	12	4
£	s.	d.	
59	3	6	¼
		4	

	20	12	4
£	s.	d.	
71	11	8	¼
		5	

	20	12	4
£	s.	d.	
81	6	9	¾
		6	

Multiply the following amounts by 2, 3, 4, up to 12:—

(1) £36 13*s.* 2¼*d.*

(2) £28 14*s.* 6½*d.*

(3) £46 3*s.* 5¼d.

(4) £46 14*s.* 6½d.

(5) £87 3*s.* 2½*d.*

(6) £26 19*s.* 8¼*d.*

(7) £116 5*s.* 4½*d.*

(8) £315 0*s.* 6½*d.*

(9) £416 7*s.* 2¼*d.*

(10) £615 3*s.* 2¾*d.*

(11) £319 6*s.* 11¼*d.*

(12) £518 6*s.* 2*d.*

Multiply £813 6*s.* 9½*d.* by 24, 25, 30, 100, 132.

Multiply £614 3*s.* 2¼*d.* by 36, 42, 81, 110, 120.

LESSON 35.

DIVISION OF MONEY.

To share 5 shillings equally among 12 men requires Division of Money. We have to ask, What sum of money multiplied by 12 will amount to 5 shillings?

This differs from Common Division by the manner in which we have to manage the overs (or remainders) in passing to a lower name. An over in the pounds is so many twenties, when turned into shillings: so we multiply it by 20, and add the shillings, and then divide that number by the divisor. The shillings over must be multiplied by 12, to turn it into pence, and then bringing in the pence, divide as before. Any over from the pence must be multiplied by 4, in order to turn it into farthings, and any other farthings added: then divide as before: any farthings over must be shown as an over, after a dash.

Example. 4 in 31, 7 and 3 over: 4 in 33, 8 and 1 over. Multiply the 1 over by 20 and add the 10's, 30: 4 in 30, 7 and 2 over: multiply the 2 by 12, 24 and 6, 30; 4 in 30, 7 and 2 over: multiply the 2 by 4, 8; 4 in 8, 2 farthings.

	20	12	4
	£	*s.*	*d.*
4)	313	10	6
	78	7	7 ½

	20	12	4
	£	*s.*	*d.*
3)	317	18	9

	20	12	4
	£	*s.*	*d.*
7)	615	4	3

	20	12	4
	£	*s.*	*d.*
4)	816	3	8

Divide £9 18*s.* 4*d.* by 2, 4, 7, 8.

Divide £7 5*s.* 3*d.* by 2, 3, 4, 6, 7, 12.

Divide the following amounts by 2, 3, 4, 5, 6, 8, 9, 10, 12: £759 7*s.* 6*d.*; £3262 10*s.*; £9103 2*s.* 6*d.*; £9140 12*s.* 6*d.*; £121 17*s.* 6*d.*; £9206 5*s.*; £815 12*s.* 6*d.*; £3712 10*s.*; £6637 10*s.*

A large number of sums may be set from the following Table; for Addition commence at any letter and take down 6, 8, or 10 amounts.

Exercise Table. C.

	£	*s.*	*d.*		£	*s.*	*d.*		£	*s.*	*d.*
a	121	6	8	k	316	9	11¾	t	703	6	0¾
b	131	7	5	l	217	3	2½	u	854	19	6¼
c	241	16	3	m	311	17	3¾	v	760	0	11¾
d	371	13	11	n	216	5	4½	w	31	7	2½
e	525	19	4	o	713	16	5½		5	0	4¾
f	464	13	10	p	716	3	9½	x		19	6¼
g	273	15	4	q	316	5	4¾		3	2	11
h	315	6	2	r	799	0	8¼	y		17	3¼
i	713	4	6	s	800	13	6½		8	7	6¼
	90	3	5		416	11	2	z	7	15	4
	306	15	4		743	8	3¾		3	6	1½

1. Add up the amounts marked a b c d e, k l m n o.
2. Subtract a from d, b from d, c from d.
3. Multiply h by 5, 6, 7, 8, 9, 10, 11, 12.
4. Divide a by 4: b by 2; c by 3; i by 6.

LESSON 36.

FIRST NOTIONS OF FRACTIONS.

Whenever any whole thing is divided into two equal parts, each part is said to be *one half*, and the two parts are called the two *halves*. If anything is divided into three equal parts, each is called a *third;* if into four equal parts, each is called a *fourth* part, or a *quarter.*

We call halves, thirds, and fourths or quarters fractions. We shall only speak now of halves and quarters.

ON HALVES.

How many halves are there in an apple? in a piece of string? in any one thing? *Two, in every case.*

On this account we say that there are two halves in 1.

One half is written $\frac{1}{2}$ (or 1/2).

The figure below the line is called the denominator, it shows how many parts the apple (or other unit) has been divided into. The figure above the line is called the numerator: it shows how many of these parts we intend. In one-half we suppose the unit divided into two parts; and one-half is one of them.

How many half-pence are there in a penny?

How many in two-pence? In three-pence?

How many pence are there in two half-pence? *One.*

How many in four? *Two.*

How do you get that? *By dividing by two.*

In three half-pence? *One, and one half-penny over.*

How do you write one half-penny? $\frac{1}{2}d.$

What does the 1 mean?

What would $\frac{2}{2}d.$ mean? *Two half-pence.*

Yes, but if we take the two halves we get the whole, so we may write that 1*d.*

So also we may write three-halves $\frac{3}{2}$ or $1\frac{1}{2}$; four-halves as $\frac{4}{2}$, or 2; five-halves as $\frac{5}{2}$, or $2\frac{1}{2}$.

How do you get the half of a number? *By dividing it by two.*

What is the half of two? of four? of six?

Of three? *One and one over.* Yes, the over is one half, so it is one and a half.

Let me see you write it. $1\frac{1}{2}$. Yes, or $\frac{3}{2}$.

Of five? of six? of seven? of nine?

Write down the halves of 21, 29, 30, 33, 72, 65.

What is the half of a shilling? of a pound?

LESSON 37.

ON QUARTERS.

How many quarters are there in an apple? *Four.*

In any unit? *Four.* How many in a half? *Two.*

What part of a penny is a farthing? *A fourth part.*

How do you write one *fourth* in figures? $\frac{1}{4}$.

Yes, we write one quarter, or one fourth, $\frac{1}{4}$; two quarters, $\frac{2}{4}$, which is the same as $\frac{1}{2}$; three quarters, $\frac{3}{4}$; and four quarters, or $\frac{4}{4}$, which is the same as 1.

Thus you see that when we can divide both the numerator and denominator by the same number, we may do so, and it does not affect the value of the fraction; $\frac{2}{4}$ is the same as $\frac{1}{2}$, $\frac{4}{4}$ as 1.

How many quarters are there in 2? in 3? in 4?
How many wholes do 8 quarters make?
How many do 5 make? 6? 7? 8? 9? 10?

How do you write 2 farthings? 3 farthings?
What is 5 farthings? $1\frac{1}{4}d.$
How many farthings do 4 pence make? 5, 6, &c. up to 12?
How many pence in 6 farthings? in 7, 8, &c. up to 50?
What is the fourth of a shilling? of a pound?

LESSON 38.

ADDITION AND SUBTRACTION OF FRACTIONS.

What is a halfpenny and a farthing? 3 *farthings; because a halfpenny is two farthings, and one more makes* 3 *farthings.*
What is a half and a quarter? *Three quarters; because one half is two quarters, and one more makes three.*

That is Addition of Fractions. If the fractions are all halves, or all quarters, if they have, that is, the same denominator, they are of the same kind, and we can add them together at once (or subtract them); but if they are, some halves, and some quarters, we must bring them all to the same denominator, before we can add them or subtract them.

Thus $\frac{5}{2}$ and $\frac{1}{2}$ are $\frac{6}{2}$ or 3; and $\frac{5}{2}$ less $\frac{3}{2}$ makes $\frac{2}{2}$ or 1.
What is $\frac{1}{2}$ and $\frac{3}{4}$? What is $\frac{1}{2}$ a shilling and $\frac{1}{4}$ of a shilling? $\frac{1}{2}$ a shilling and $\frac{3}{4}$ of a shilling? $\frac{1}{2}$ a pound and $\frac{3}{4}$ of a pound?

LESSON 39.

MULTIPLICATION OF FRACTIONS.

What is $\frac{1}{2}$ of a halfpenny? *A farthing.* That is, $\frac{1}{4}d.$, one fourth of a penny.

What is half the half of an apple? *One quarter.*

How do you get the half of a number? *By dividing it by two.*

Yes, when we divide 1 by two, we do it by writing 2 for a denominator, which expresses that we reckon in halves: taking $\frac{1}{2}$ of $\frac{1}{2}$ is done by multiplying together the two denominators, making $\frac{1}{4}$. This is called multiplying by a fraction, and the rule is:—Multiply together the numerators for a new numerator and the denominators for a new denominator.

LESSON 40.

DIVISION OF FRACTIONS.

What is 1 divided by $\frac{1}{2}$? This means, how many halves would it take to make 1? *Two, of course.*

Again, how many quarters would it take to make one? *Four.* And to make $\frac{1}{2}$? *Two.*

Thus, 1 divided by $\frac{1}{2}$ is 2: 1 divided by $\frac{1}{4}$ is 4; and $\frac{1}{2}$ divided by $\frac{1}{4}$ is 2. So you see that you have to invert or turn over the fractional divisor and multiply by it. $\frac{1}{2}$ inverted becomes 2: and dividing by $\frac{1}{2}$ is the same as multiplying by 2. $\frac{1}{4}$ inverted becomes 4, and dividing by $\frac{1}{4}$ is the same as multiplying by 4.

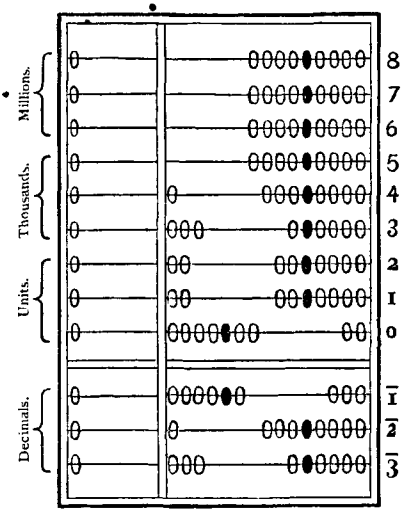
[Thirds may be treated similarly.]

APPENDIX.

The Teacher should have a Numeration Frame, which he may procure at the National Society's Depository.

The Numeration Frame has twelve wires, on each of which are ten balls, one of them, called a Teen-ball, being separated from the rest by a bar called the Counting Bar. Each wire has a local value, on the principle of the Numeration Table, and a Teen-ball counts for ten. The wire marked 0 is the units-wire, that marked 1 is the tens-wire, and so on. The three below the Cross (or decimal) Bar are decimals, for later use. Balls are only counted when moved up to the Counting Bar, and are out of the counting when in contact with the Frame on either side. The classes Units, Thousands, Millions, have the same colour throughout. To assist the eye the fifth ball on each wire is coloured differently. The Teen-ball enables the Teacher to show a teen-number on a single wire, to illustrate Subtraction. The number represented in the figure is 13,227·613. The Numeration Frame is a modification of the Chinese Swan-pan. It is made with a Chequer Board on the back, which will often be found useful in teaching.

NUMERATION FRAME.



Clarendon Press Series

ANSWERS TO THE EXAMPLES

IN

'FIGURES MADE EASY

TOGETHER WITH

TWO THOUSAND ADDITIONAL EXAMPLES

FORMED FROM THE TABLES IN THE SAME, WITH ANSWERS

BY

LEWIS HENSLEY, M.A.

Formerly Fellow and Assistant Tutor of Trinity College, Cambridge

Oxford

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PART I.

ANSWERS

TO THE

EXAMPLES IN 'FIGURES MADE EASY.'

N.B. The pages refer to those in 'Figures made Easy.'

LESSON 19. PAGE 28.

ADDITION.

Figures below Seven.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
76	88	84	105	111	86	117	48	67	98	81
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
143	144	165	139	166	181	207	127	173	184	167
(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)
122	117	128	132	180	189	207	180	163	172	190

Examples with the Higher Figures.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
59	93	91	100	108	130	104	148	102	58	133
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
159	136	168	166	118	189	173	112	199	112	142
(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)
255	267	275	211	204	194	273	307	271	196	196

PAGES 30, 31.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1407	1628	731	1984	1012	1711	2073	1401

(9)	(10)	(11)	(12)	(13)	(14)	(15)
12381	12819	7979	11086	25512	127060	135999

(16)	(17)	(18)	(19)	(20)	(21)
1171161	905064	591631	1453631	915920	975199

(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
1902	1999	1700	2084	2725	3079	1974	2302

(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)
2621	1945	1760	1445	460	19267	12176	22938

(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)
3544	3995	9619	37312	20478	39866	59248	47671

(46)	(47)	(48)	(49)	(50)	(51)	(52)
256423	394051	254652	235539	202399	125967	55686

1. 30.	4. 44.	7. 39.	10. 236.	13. 502.
2. 36.	5. 93.	8. 209.	11. 187.	14. 2321.
3. 1578.	6. 44.	9. 130.	12. 216.	

PAGES 23, 24.

C. 1. 572. 2. 710. 3. 1006. 4. 1616. 5. 5780.
E. 1. 8148. 2. 10671. 3. 34133. 4. 65175. 5. 270250.
G. 1. 149815. 2. 39562.

LESSON 20. PAGES 34, 35.

SUBTRACTION.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
11	22	29	9	19	57	13	47	15	62

(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
67	104	189	514	256	384	515	367	363

(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
2561	5858	542	763	886	263	949	4064
(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
3155	2667	3784	2127	3998	5222	548	4465
(36)	(37)	(38)	(39)	(40)	(41)	(42)	
21755	10155	1505	18544	38265	22678	18238	
(43)	(44)	(45)	(46)	(47)	(48)	(49)	
16322	21267	20722	1874	6278	56881	26458	
(50)	(51)	(52)	(53)	(54)	(55)		
406834	92233	1776952	14554	2042409	64613		
(56)	(57)	(58)	(59)	(60)	(61)		
625310	31555	424327	63012	62569	9973		
(62)	(63)	(64)	(65)	(66)	(67)		
235677	18670	133313	18711	217248	470205		

PAGE 36.

1. 45622.
2. 637989.
3. 842.
4. 48368.
5. 558584.
6. 17.
7. 14.
8. 11.
9. 33.
10. 2861.
11. 2209.
12. 9276.

LESSON 22. PAGES 40, 41.

MULTIPLICATION.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
628,	686,	8246,	84806,	62648,	86068,	86810,	88470,	68508,
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	
90612,	87130,	93074,	93470,	113476,	131556,	135618,	130778,	
(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
147798,	167582,	1019618;	66,	96,	1239,	1542,	1815,	9381,
(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	
12324,	10581,	13134,	17037,	17367,	201879,	238095,	268095,	

(35) (36) (37) (38) (39) (40) (41) (42)
261018, 242739, 275505, 296115, 286296, 286293; 884, 1292,

(43) (44) (45) (46) (47) (48) (49) (50) (51)
936, 1364, 1728, 1764, 1780, 1744, 1852, 14580, 14628,

(52) (53) (54) (55) (56) (57) (58) (59)
22928, 22552, 22992, 21632, 228356, 231476, 235852, 203980,

(60) (61) (62) (63) (64) (65) (66) (67) (68)
359504; 1065, 1570, 2080, 3125, 3530, 4130, 4680, 4230,

(69) (70) (71) (72) (73) (74) (75) (76) (77)
2585, 3135, 3360, 3905, 2895, 33895, 4895, 244660, 269470,

(78) (79) (80) (81) (82) (83) (84) (85)
304530, 354920, 4096615; 1878, 2472, 3078, 2610, 3096,

(86) (87) (88) (89) (90) (91) (92) (93) (94)
2496, 3402, 4032, 4578, 4608, 42486, 43698, 39294, 39558,

(95) (96) (97) (98) (99) (100) (101) (102) (103)
53484, 53958, 59322, 588438, 239190, 288576; 2961, 2464, 2912,

(104) (105) (106) (107) (108) (109) (110) (111) (112) (113)
3241, 2989, 3311, 3766, 4256, 50274, 57533, 58051, 691341, 685342.

	(114)	(115)	(116)	(117)	(118)	(119)	(120)
By 8 ...	2744	3624	4048	4128	4856	5816	1456
„ 9 ...	3087	4077	4554	4644	5463	6543	1638
„ 11 ...	3773	4983	5566	5676	6677	7997	2002
„ 12 ...	4116	5436	6072	6192	7284	8724	2184

	(121)	(122)	(123)	(124)	(125)	(126)
By 8 ...	30624	38552	43136	50344	58352	713896
„ 9 ...	34452	43371	48528	56637	65646	803133
„ 11 ...	42108	53009	59312	69223	80234	981607
„ 12 ...	45936	57828	64704	75516	87528	1070844

	(127)	(128)	(129)	(130)	(131)	(132)
By 8 ...	639496	712824	2775264	399456	2921192	3720744
„ 9 ...	719433	801927	3122172	449388	3286341	4185837
„ 11 ...	879307	980133	3815988	549252	4016639	5116023
„ 12 ...	959244	1069236	4162896	599184	4381788	5581116

PAGE 41.

Multnd ...	324225	2132123	3241245	1324526	1452367
By 2 ...	648450	4264246	6482490	2649052	2904734
„ 3 ...	972675	6396369	9723735	3973578	4357101
„ 4 ...	1296900	8528492	12964980	5298104	5809468
„ 5 ...	1621125	10660615	16206225	6622630	7261835
„ 6 ...	1945350	12792738	19447470	7947156	8714202
„ 7 ...	2269575	14924861	22688715	9271682	10166569
„ 8 ...	2593800	17056984	25929960	10596208	11618936
„ 9 ...	2918025	19189107	29171205	11920734	13071303
„ 10 ...	3242250	21321230	32412450	13245260	14523670
„ 11 ...	3566475	23453353	35653695	14569786	15976037
„ 12 ...	3890700	25585476	38894940	15894312	17428404

Multnd ..	2435768	35769	46829	5893276	8937023	9807236
By 2 ..	4871536	71538	93658	11786552	17874046	19614472
„ 3 ..	7307304	107307	140487	17679828	26811069	29421708
„ 4 ..	9743072	143076	187316	23573104	35748092	39228944
„ 5 ..	12178840	178845	234145	29466380	44685115	49036180
„ 6 ..	14614608	214614	280974	35359656	53622138	58843416
„ 7 ..	17050376	250383	327803	41252932	62559161	68650652
„ 8 ..	19486144	286152	374632	47146208	71496184	78457888
„ 9 ..	21921912	321921	421461	53039484	80433207	88265124
„ 10 ..	24357680	357690	468290	58932760	89370230	98072360
„ 11 ..	26793448	393459	515119	64826036	98307253	107879596
„ 12 ..	29229216	429228	561948	70719312	107244276	117686832

LESSON 23. PAGE 42.

MULTIPLICATION BY TENS.

By 10 ... 36140, 41350, 217820.
„ 20 ... 5260, 6240, 8260, 10280, 12840, 14300, 13780.

Multnd ...	4638	5643	64938	783	81469
By 10 ...	46380	56430	649380	*7830	*814690
„ 20 ...	92760	112860	1298760	15660	1629380
„ 30 ...	139140	169290	1948140	23490	2444070
„ 40 ...	185520	225720	2597520	31320	3258760
„ 50 ...	231900	282150	3246900	39150	4073450
„ 60 ...	278280	338580	3896280	46980	4888140
„ 70 ...	324660	395010	4545660	54810	5702830
„ 80 ...	371040	451440	5195040	62640	6517520
„ 90 ...	417420	507870	5844420	70470	7332210

Multipliers.		Multipliers.		Multipliers.	
1 ...	7136	1 ...	81643	1 ...	7546
100 ...	713600	300 ...	24492900	1000 ...	7546000
1100 ...	7849600	1100 ...	89807300	3000 ...	22638000
1200 ...	8563200	1200 ...	97971600	5000 ...	37730000
				6000 ...	45276000

LESSON 24. PAGE 43.

MULTIPLICATION BY COMPOSITE NUMBERS.

Multipliers.		Multipliers.		Multipliers.		Multipliers.	
1 ...	3651	1 ...	7123	1 ...	24163	1 ...	36543
24 ...	87624	63 ...	448749	84 ...	2029692	33 ...	1205919
35 ...	127785	84 ...	598332	96 ...	2319648	48 ...	1754064
81 ...	295731	72 ...	512856	28 ...	676564	96 ...	3508128
36 ...	131436	21 ...	149583	32 ...	773216	21 ...	767403
27 ...	98577	18 ...	128214	66 ...	1594758	16 ...	584688
45 ...	164295	42 ...	299166	54 ...	1304802	84 ...	3069612
		27 ...	192321	108 ...	2609604	132 ...	4823676
		56 ...	398888				

LESSON 26. PAGE 47.

SHORT DIVISION.

	(1)	(2)	(3)	(4)	(5)	(6)
By 2 ...	1731,	20766,	25837,	40634,	47182,	10835.

	(7)	(8)	(9)	(10)	(11)	(12)	(13)
„ 3 ...	10557,	18121,	237004,	27164,	12550,	6667,	3334.

* Add the requisite ciphers, according to the multiplier.

	(14)	(15)	(16)	(17)	(18)	(19)	(20)
By 4 ...	156,	1782,	2225,	7516,	17508,	4529,	9182.
	(21)	(22)	(23)	(24)	(25)	(26)	(27)
„ 5 ...	73,	1425,	1687,	18001,	7211,	14247,	16251.
	(28)	(29)	(30)	(31)	(32)	(33)	
„ 6 ...	772,	14521,	5501,	14412,	9116,	11889.	
	(34)	(35)	(36)	(37)	(38)	(39)	
„ 7 ...	935,	1205,	1097,	8039,	59449,	7302.	
	(40)	(41)	(42)	(43)	(44)		
„ 8 ...	896,	458,	8920,	8974,	124986.		
	(45)	(46)	(47)	(48)	(49)		
„ 9 ...	41,	237,	25958,	13126,	479301.		
	(50)	(51)	(52)	(53)	(54)		
„ 11 ...	332,	194,	5595,	7215,	194231.		
	(55)	(56)	(57)	(58)	(59)		
„ 12 ...	74,	314,	4506,	2778,	8337.		

Div^{ds}.. 270	384	4626	7321	6143	867163	81543
By 2 .. 135	192	2313	3660-1	3071-1	433581-1	40771-1
„ 3 .. 90	128	1542	2440-1	2047-2	289054-1	27181
„ 4 .. 67-2	96	1156-2	1830-1	1535-3	216790-3	20385-3
„ 5 .. 54	76-4	925-1	1464-1	1228-3	173432-3	16308-3
„ 6 .. 45	64	771	1220-1	1023-5	144527-1	13590-3
„ 7 .. 38-4	54-6	660-6	1045-6	877-4	123880-3	11649
„ 8 .. 33-6	48	578-2	915-1	767-7	108395-3	10192-7
„ 9 .. 30	42-6	514	813-4	682-5	96351-4	9060-3
„ 10 .. 27	38-4	462-6	732-1	614-3	86716-3	8154-3
„ 11 .. 24-6	34-10	420-6	665-6	558-5	78833	7413
„ 12 .. 22-6	32	385-6	610-1	511-11	72263-7	6795-3

LESSON 27. PAGE 48.

CONTINUED SHORT DIVISION.

1. 6135.	6. 96814.	11. 910116.	16. 18496.
2. 7131.	7. 51371.	12. 30625.	17. 25992.
3. 3654.	8. 93025.	13. 19600.	18. 25966.
4. 731.	9. 93312.	14. 12864.	19. 44521.
5. 652.	10. 59536.	15. 73612.	20. 14247.

LESSON 28. PAGE 50.

MULTIPLICATION (GENERAL).

(1)	(2)	(3)	(4)	(5)	(6)	(7)
4928	7176	5922	17476	7969	22225	30176
(8)	(9)	(10)	(11)	(12)	(13)	(14)
16116	10455	13737	23606	37167	24444	24016
(15)	(16)	(17)	(18)	(19)		(20)
15934	154468	209100	399938	539963		362817

PAGE 51.

1. 48,553.
2. 106,556.
3. 177,418.
4. 190,185.
5. 162,084.
6. 140,466.
7. 272,155.
8. 263,461.
9. 315,172.
10. 449,845.
11. 330,694.
12. 716,720.
13. 169,386.
14. 539,105.
15. 444,924.
16. 391,468.
17. 264,240.
18. 556,968.
19. 536,550.
20. 834,768.
21. 532,608.
22. 604,872.
23. 200,947.
24. 762,720.
25. 3,027,661.
26. 1,083,618.
27. 1,284,050.
28. 1,903,617.
29. 2,031,015.
30. 3,440,192.
31. 3,497,816.
32. 3,323,322.
33. 4,923,081.
34. 5,690,844.
35. 3,283,664.
36. 3,664,440.
37. 2,051,832.
38. 4,064,721.
39. 6,532,956.
40. 4,635,618.
41. 4,316,466.
42. 1,975,914.
43. 3,962,852.
44. 3,781,126.
45. 4,243,569.
46. 6,173,556.
47. 1,315,512.
48. 6,237,847.
49. 10,146,374.
50. 26,352,130.
51. 45,867,131.
52. 25,460,926.
53. 64,749,124.
54. 65,282,280.
55. 10,102,887.
56. 69,094,263.
57. 83,476,912.
58. 52,544,375.
59. 44,268,355.
60. 19,126,426.
61. 9,816,186.
62. 71,823,108.
63. 21,212,512.
64. 90,475,396.
65. 89,418,420.
66. 105,396,612.
67. 101,833,600.
68. 114,738,740.
69. 151,078,830.
70. 249,323,501.
71. 46,960,901.
72. 244,171,407.

PAGE 51.

E. 1. Mult^{ds} ... 1006, 1005, 1010, 1020, 1023, 1025,

By 23 .. 23138, 23115, 23230, 23460, 23529, 23575,

„ 796 .. 800776, 799980, 803960, 811920, 814308, 815900,

Mult^{ds} ... 1029, 1030.

By 23 .. 23667, 23690.

„ 796 .. 819084, 819880.

2. Mult^{ds} ... 1049, 1058, 1089, 1999, 1165,

By 23 .. 24127, 24334, 25047, 45977, 26795,

„ 796 .. 835004, 842168, 866844, 1591204, 927340,

Mult^{ds} ... 2004, 2307.

By 23 .. 46092, 53061.

„ 796 .. 1595184, 1836372.

3. Mult^{ds} .. 2856, 3073, 4096, 8046, 9059, 7003.

By 23 .. 65688, 70679, 94208, 185058, 208357, 161069.

„ 796 .. 2273376, 2446108, 3260416, 6404616, 7210964, 5574388.

4. Mult^{ds} ... 10072, 11053, 12044, 13001, 19005.

By 23 .. 231656, 254219, 277012, 299023, 437115.

„ 796 .. 8017312, 8798188, 9587024, 10348796, 15127980.

5. Mult^{ds} ... 30000, 40006, 50080, 60074, 90090.

By 23 .. 690000, 920138, 1151840, 1381702, 2072070.

„ 796 .. 23880000, 31844776, 39863680, 47818904, 71711640.

G. 1. Mult^{ds} .. 13030, 502, 76, 100007, 20200, 16000.

By 23 .. 299690, 11546, 1748, 2300161, 464600, 368000.

„ 796 .. 10371880, 399592, 60496, 79605572, 16079200, 12736000.

2. Mult^{ds} ... 316, 750, 594, 18002, 19900.

By 23 .. 7268, 17250, 13662, 414046, 457700.

„ 796 .. 251536, 597000, 472824, 14329592, 15840400.

LESSON 29. PAGE 53.

LONG DIVISION.

1. 52.	16. 162.	31. 10082.	46. 981.
2. 51.	17. 208.	32. 3362.	47. 701.
3. 46.	18. 167.	33. 847.	48. 1119.
4. 76.	19. 315.	34. 567.	49. 653.
5. 52.	20. 187.	35. 1682.	50. 712.
6. 84.	21. 338.	36. 7225.	51. 239.
7. 37.	22. 63.	37. 2809.	52. 971.
8. 39.	23. 37.	38. 4050.	53. 803.
9. 38.	24. 33.	39. 6889.	54. 777.
10. 27.	25. 968.	40. 2820.	55. 99.
11. 82.	26. 1083.	41. 863.	56. 12130.
12. 44.	27. 2209.	42. 7131.	57. 657.
13. 48.	28. 1369.	43. 8169.	58. 1046.
14. 78.	29. 1156.	44. 1643.	59. 969.
15. 76.	30. 961.	45. 7136.	60. 951.

Exercise Table B. Page 54.

1. 3891.

2. a × b = 1788831, e × h = 4369068, q × u = 54399720, x × z = 69319125.

LESSON 32. PAGES 59, 60.

ADDITION OF MONEY.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
d.	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
6	1 2	1 2	1 8	2 2	6 5	13 9	10 3

(9)	(10)	(11)	(12)	(13)	(14)
s. *d.*	*£* *s.* *d.*	*£* *s.* *d.*	*£* *s.* *d.*	*£* *s.* *d.*	*£* *s.* *d.*
19 6	2 3 9	1 13 8	3 2 8	3 8 8	2 1 10

(15)	(16)	(17)	(18)	(19)	(20)
£ s. d.	£ s. d.	£ s. d.	s. d.	s. d.	s. d.
1 18 5	1 11 2	2 14 10	10 3	15 5	17 $9\frac{3}{4}$

(21)	(22)	(23)	(24)	(25)
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
2 19 $6\frac{1}{4}$	1 14 $8\frac{3}{4}$	1 19 $8\frac{1}{4}$	2 1 $2\frac{3}{4}$	18 7 $7\frac{3}{4}$

(26)	(27)	(28)	(29)
£ s. d.	£ s. d.	£ s. d.	£ s. d.
39 15 $2\frac{1}{4}$	91 9 $0\frac{1}{2}$	189 10 7	379 6 8

(30)	(31)	(32)	(33)
£ s. d.	£ s. d.	£ s. d.	£ s. d.
182 6 6	107 5 $3\frac{3}{4}$	1019 3 $10\frac{1}{2}$	1175 8 1

(34)	(35)	(36)	(37)
£ s. d.	£ s. d.	£ s. d.	£ s. d.
2659 14 $0\frac{1}{2}$	2220 9 $3\frac{3}{4}$	4039 19 $0\frac{1}{4}$	11345 12 5

LESSON 33. PAGE 61.

SUBTRACTION OF MONEY.

(1)	(2)	(3)	(4)
s. d.	£ s. d.	£ s. d.	£ s. d.
2 2	7 1 2	10 1 $2\frac{1}{4}$	9 5 $10\frac{3}{4}$

(5)	(6)	(7)	(8)
£ s. d.	£ s. d.	£ s. d.	£ s. d.
20 0 $10\frac{1}{2}$	54 17 $7\frac{1}{4}$	14 2 $8\frac{1}{2}$	15 1 $8\frac{1}{4}$

(9)	(10)	(11)	(12)
£ s. d.	£ s. d.	£ s. d.	£ s. d.
583 15 9	520 18 $2\frac{3}{4}$	488 18 $7\frac{3}{4}$	28 6 $6\frac{1}{4}$

(13)	(14)	(15)	(16)
£ s. d.	£ s. d.	£ s. d.	£ s. d.
1300 19 4	6318 4 $0\frac{3}{4}$	5094 2 $6\frac{1}{4}$	2972 14 $7\frac{1}{2}$

LESSON 34. PAGE 62.

MULTIPLICATION OF MONEY.

	(1)			(2)			(3)			(4)		
Multrs	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1 ...	36	13	2¼	28	14	6½	46	3	5¼	46	14	6½
2 ...	73	6	4½	57	9	1	92	6	10½	93	9	1
3 ...	109	19	6¾	86	3	7½	138	10	3¾	140	3	7½
4 ...	146	12	9	114	18	2	184	13	9	186	18	2
5 ...	183	5	11¼	143	12	8½	230	17	2¼	233	12	8½
6 ...	219	19	1½	172	7	3	277	0	7½	280	7	3
7 ...	256	12	3¾	201	1	9½	323	4	0¾	327	1	9½
8 ...	293	5	6	229	16	4	369	7	6	373	16	4
9 ...	329	18	8¼	258	10	10½	415	10	11¼	420	10	10½
10 ...	366	11	10½	287	5	5	461	14	4½	467	5	5
11 ...	403	5	0¾	315	19	11½	507	17	9¾	513	19	11½
12 ...	439	18	3	344	14	6	554	1	3	560	14	6

	(5)			(6)			(7)			(8)		
Multrs	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1 ...	87	3	2½	26	19	8¼	116	5	4½	315	0	6½
2 ...	174	6	5	53	19	4½	232	10	9	630	1	1
3 ...	261	9	7½	80	19	0¾	348	16	1½	945	1	7½
4 ...	348	12	10	107	18	9	465	1	6	1260	2	2
5 ...	435	16	0½	134	18	5¼	581	6	10½	1575	2	8½
6 ...	522	19	3	161	18	1½	697	12	3	1890	3	3
7 ...	610	2	5½	188	17	9¾	813	17	7½	2205	3	9½
8 ...	697	5	8	215	17	6	930	3	0	2520	4	4
9 ...	784	8	10½	242	17	2¼	1046	8	4½	2835	4	10½
10 ...	871	12	1	269	16	10½	1162	13	9	3150	5	5
11 ...	958	15	3½	296	16	6¾	1278	19	1½	3465	5	11½
12 ...	1045	18	6	323	16	3	1395	4	6	3780	6	6

Multrs	(9) £	s.	d.	(10) £	s.	d.	(11) £	s.	d.	(12) £	s.	d.
1 ...	416	7	2¼	615	3	2¾	319	0	11¼	518	6	2
2 ...	832	14	4½	1230	6	5½	638	1	10½	1036	12	4
3 ...	1249	1	6¾	1845	9	8¼	957	2	9¾	1554	18	6
4 ...	1665	8	9	2460	12	11	1276	3	9	2073	4	8
5 ...	2081	15	11¼	3075	16	1¾	1595	4	8¼	2591	10	10
6 ...	2498	3	1½	3690	19	4½	1914	5	7½	3109	17	0
7 ...	2914	10	3¾	4306	2	7¼	2233	6	6¾	3628	3	2
8 ...	3330	17	6	4921	5	10	2552	7	6	4146	9	4
9 ...	3747	4	8¼	5536	9	0¾	2871	8	5¼	4664	15	6
10 ...	4163	11	10½	6151	12	3½	3190	9	4½	5183	1	8
11 ...	4579	19	0¾	6766	15	6¼	3509	10	3¾	5701	7	10
12 ...	4996	6	3	7381	18	9	3828	11	3	6219	14	0

Multrs	£	s.	d.
1 ...	813	6	9½
24 ...	19520	3	0
25 ...	20333	9	9½
30 ...	24400	3	9
100 ...	81333	19	2
132 ...	107360	16	6

Multrs	£	s.	d.
1 ...	614	3	2¼
36 ...	22109	14	9
42 ...	25794	13	10½
81 ...	49746	18	2¼
110 ...	67557	10	7½
120 ...	73699	2	6

LESSON 35. PAGE 64.

DIVISION OF MONEY.

Divrs	£	s.	d.	£	s.	d.
1 ...	9	18	4	7	5	3
2 ...	4	19	2	3	12	7½
3 ...				2	8	5
4 ...	2	9	7	1	16	3¾
5 ...						
6 ...				1	4	2½
7 ...	1	8	4	1	0	9
8 ...	1	4	9½			
12 ...				0	12	1¼

Divrs	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1 ...	759	7	6	3262	10	0	9103	2	6	9140	12	6
2 ...	379	13	9	1631	5	0	4551	11	3	4570	6	3
3 ...	253	2	6	1087	10	0	3034	7	6	3046	17	6
4 ...	189	16	10½	815	12	6	2275	15	7½	2285	3	1½
5 ...	151	17	6	652	10	0	1820	12	6	1828	2	6
6 ...	126	11	3	543	15	0	1517	3	9	1523	8	9
8 ...	94	18	5¼	407	16	3	1137	17	9¾	1142	11	6¾
9 ...	84	7	6	362	10	0	1011	9	2	1015	12	6
10 ...	75	18	9	326	5	0	910	6	3	914	1	3
12 ...	63	5	7½	271	17	6	758	11	10½	761	14	4½

Divrs	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1 ..	121	17	6	9206	5	0	815	12	6	3712	10	0	6637	10	0
2 ..	60	18	9	4603	2	6	407	16	3	1856	5	0	3318	15	0
3 ..	40	12	6	3068	15	0	271	17	6	1237	10	0	2212	10	0
4 ..	30	9	4½	2301	11	3	203	18	1½	928	2	6	1659	7	6
5 ..	24	7	6	1841	5	0	163	2	6	742	10	0	1327	10	0
6 ..	20	6	3	1534	7	6	135	18	9	618	15	0	1106	5	0
8 ..	15	4	8¼	1150	15	7½	101	19	0¾	464	1	3	829	13	9
9 ..	13	10	10	1022	18	4	90	12	6	412	10	0	737	10	0
10 ..	12	3	9	920	12	6	81	11	3	371	5	0	663	15	0
12 ..	10	3	1½	767	3	9	67	19	4½	309	7	6	553	2	6

Exercise Table C. Page 64.

1. £1392 3*s.* 7*d.*; £1775 12*s.* 4*d.*

2. £250 7*s.* 3*d.*; £240 6*s.* 6*d.*; £129 17*s.* 8*d.*

3.

Multrs	£	s.	d.
1 ...	315	6	2
5 ...	1576	10	10
6 ...	1891	17	0
7 ...	2207	3	2
8 ...	2522	9	4
9 ...	2837	15	6
10 ...	3153	1	8
11 ...	3468	7	10
12 ...	3783	14	0

4. £30 6*s.* 8*d.*; £65 13*s.* 8½*d.*; £80 12*s.* 1*d.*; £118 17*s.* 5*d.*

PART II.

ANSWERS

TO

ADDITIONAL EXAMPLES FORMED FROM THE TABLES.

Examples in Addition. Exercise Table B. Page 54.

Write down as many of the top rows as are indicated and add up.

No. of rows.							
3 ..	8465	3043	1717	3885	8239	5248	3528
4 ..	9184	13042	1978	4762	12353	12564	11639
5 ..	13842	21374	2694	12343	12575	14448	12648
6 ..	14147	30380	2719	12347	20893	14822	12710
7 ..	14619	33719	9900	17892	21103	20822	12785
8 ..	20260	36084	16317	21146	21716	29534	15773
9 ..	20331	36449	24436	21173	27432	29876	15793
10 ..	24372	36540	24701	29635	27749	36416	16604
11 ..	24471	45428	24756	36695	29829	40066	23734
12 ..	30476	45745	25244	37472	36893	41017	27545

Write down as many of the bottom rows as are indicated and add up.

No. of rows.							
3 ..	12833	800068	940385	1238058	1510	1238442	2142980
4 ..	18838	800385	940873	1238835	8574	1239393	2146791
5 ..	18937	809273	940928	1245895	10654	1243043	2153921
6 ..	22978	809364	941193	1254357	10971	1249583	2154732
7 ..	23049	809729	949312	1254384	16687	1249925	2154752
8 ..	28690	812094	955729	1257638	17300	1258637	2157740
9 ..	29162	815433	962910	1263183	17510	1264637	2157815
10 ..	29467	824439	962935	1263187	25828	1265011	2157877
11 ..	34125	832771	963651	1270768	26050	1266895	2158886
12 ..	34844	842770	963912	1271645	30164	1274211	2166997

(200 Answers.) Number of Addenda (taken in columns).

Beginning from	6	7	8	9	10	11	12	13
a ..	14147	14619	20260	20331	24372	24471	30476	34803
b ..	2719	9900	16317	24436	24701	24756	25244	686747
c ..	20893	21103	21716	27432	27749	29829	36893	37214
d ..	12710	12785	15773	15793	16604	23734	27545	849210
e ..	33513	35878	36243	36334	45222	45539	67864	709066
f ..	17674	20928	20955	29417	36477	37254	308854	1121200
g ..	20522	29234	29576	36116	39766	40717	855342	978545
h ..	13801	13872	17913	18012	24017	28344	33745	36850
i ..	15499	23618	23883	23938	24426	685929	758270	964811
k ..	12900	12920	13731	20861	24672	846337	1347538	2167652
l ..	33406	33497	42385	42702	65027	706229	842770	843087
m ..	17288	25750	32810	33587	305187	1117533	1271645	1278809
n ..	24628	31168	34818	35769	850394	973597	1274211	1274923
o ..	10629	16634	20961	26362	29467	29673	31851	32510
p ..	22062	22550	684053	756394	962935	963153	963179	966820
q ..	17254	24318	24639	25209	25828	26128	30259	31076
r ..	11086	14897	836562	1337763	2157877	2163520	2164336	2166342
s ..	34351	675553	812094	812411	812912	813811	814072	814788
t ..	1100272	1254384	1261548	1262404	1262623	1266737	1266959	1275277
u ..	1249583	1250295	1252456	1253111	1261222	1262231	1262293	1262368
v ..	19143	21321	21980	31979	40311	49317	52656	55021
w ..	941117	944758	945635	953216	953220	958765	962019	962046
x ..	801785	802046	802762	802787	809968	816385	824504	824769
y ..	283644	291225	291229	296774	300028	300055	308517	315577
z ..	24479	33485	36824	39189	39554	39645	48533	48850

(200 Answers.) Number of Addenda (taken in rows).

Beginning from	6	7	8	9	10	11	12	13
a ..	13848	14560	15376	17554	18055	18081	18937	23068
b ..	9527	11705	12206	12232	13088	17219	19380	21386
c ..	11671	11697	12553	16684	18845	20851	21510	22409
d ..	5089	9220	11381	13387	14046	14945	18586	18805
e ..	9853	11859	12518	13417	17058	17277	18094	18749
f ..	9839	10738	14379	14598	15415	16070	16789	26788
g ..	13497	13716	14533	15188	15907	25906	26167	27044
h ..	8241	8896	9615	19614	19875	20752	24866	32182
i ..	6950	16949	17210	18087	22201	29517	37628	42286

k ..	16625	23941	32052	36710	45042	45758	53339	53561
l ..	30678	35336	43668	44384	51965	52187	54071	55080
m ..	33408	34124	41705	41927	43811	44820	45125	54131
n ..	36714	36936	38820	39829	40134	49140	49165	49169
o ..	18032	18094	18566	21905	29086	34631	34841	40841
p ..	9255	12594	19775	25320	25530	31530	31605	37246
q ..	19746	25291	25501	31501	31576	37217	39582	45999
r ..	16809	22809	22884	28525	30890	37307	40561	41174
s ..	24349	24420	24785	32904	32931	38647	38989	39009
t ..	10237	10502	18964	19281	25821	26632	26731	35619
u ..	23453	25533	29183	36313	42318	42635	43123	43900
v ..	21832	28962	34967	35284	35772	36549	43613	44564
w ..	17418	39743	701246	972846	973167	1787792	2609457	2614858
x ..	2592039	2597440	3238642	3310983	4123329	4123899	4247102	4748303
y ..	1512766	1649307	1855848	2009960	2010579	2311193	3131307	3136950
z ..	801532	1621646	1627289	1627495	1627812	1628030	1635194	1635494

Answers to 66 Subtraction Examples derived from Table A, page 16.

Take down 9 figures (those marked a to i) from each of the rows named, and find the difference of the two numbers.

A B ... 314710580	C E ... 88875306	E L ... 613251250
A C ... 302484253	C F ... 165199588	F G ... 158392243
A D ... 215876145	C G ... 323591831	F H ... 249500461
A E ... 391359559	C H ... 414700049	F I ... 341511435
A F ... 137284665	C I ... 506711023	F J ... 442430696
A G ... 21107578	C J ... 607630284	F K ... 551345194
A H ... 112215796	C K ... 716544782	F L ... 359176356
A I ... 204226770	C L ... 524375944	G H ... 91108218
A J ... 305146031	D E ... 175483414	G I ... 183119192
A K ... 414060529	D F ... 78591480	G J ... 284038453
A L ... 221891691	D G ... 236983723	G K ... 392952951
B C ... 617194833	D H ... 328091941	G L ... 200784113
B D ... 530586725	D I ... 420102915	H I ... 92010974
B E ... 706070139	D J ... 521022176	H J ... 192930235
B F ... 451995245	D K ... 629936674	H K ... 301844733
B G ... 293603002	D L ... 437767836	H L ... 109675895
B H ... 202494784	E F ... 254074894	I J ... 100919261
B I ... 110483810	E G ... 412467137	I K ... 209833759
B J ... 9564549	E H ... 503575355	I L ... 17664921
B K ... 99349949	E I ... 595586329	J K ... 108914498
B L ... 92818889	E J ... 696505590	J L ... 83254340
C D ... 86608108	E K ... 805420088	K L ... 192168838

Similarly the two first columns might be covered, or numbers of more or fewer figures taken out.

Multiply the numbers in the top row of Table B (page 54) by the numbers indicated.

f ..	146718	5356	8242	5668	186264	7800	18512
p ..	141075	5150	7925	5450	179100	7500	17800
t ..	152361	5562	8559	5886	193428	8100	19224
r ..	349866	12772	19654	13516	444168	18600	44144
v ..	558657	20394	31383	21582	709236	29700	70488
o ..	1721115	62830	96685	66490	2185020	91500	217160
h ..	11319858	413236	635902	437308	14370984	601800	1428272
w ..	2753784	100528	154696	106384	3496032	146400	347456
k ..	3696165	134930	207635	142790	4692420	196500	466360
i ..	5073057	185194	284983	195982	6440436	269700	640088
m ..	4948911	180662	278009	191186	6282828	263100	624424
u ..	36905220	1347240	2073180	1425720	46852560	1962000	4656480
e ..	12250953	448668	690426	474804	15603192	653400	1550736
g ..	23311233	850986	1309527	900558	29594484	1239300	2941272
l ..	56424357	2059794	3169683	2179782	71632836	2999700	7119288
n ..	41284188	1507096	2319172	1594888	52411824	2194800	5208992
q ..	46938474	1713508	2636806	1813324	59590152	2495400	5922416
s ..	13345695	487190	749705	515570	16942860	709500	1683880
z ..	17521515	639630	984285	676890	22244220	931500	2210760

Multiply the five last numbers in the last row (Table B) by the numbers indicated.

t ...	5576607	4161024	16713	8116578	22143078
r ...	12805542	9554944	38378	18638068	50847068
v ...	20447559	15257088	61281	29760786	81191286
o ...	62995005	47004160	188795	91687270	250134770
h ...	414321246	309148672	1241714	603031684	1645148684
w ...	100792008	75206656	302072	146699632	400215632
a ...	1165510863	869654016	3493017	1696364802	4627903302

Examples in Multiplication founded on Table B, page 54.

Multiply by (a) all the numbers in the rows named.

Row'							
1 ..	31843449	1162458	1788831	1230174	40426452	1692900	4017816
2 ..	4604688	12290454	2827143	146718	4830408	23311233	12194523
3 ..	11319858	3718737	5073057	20546163	1235817	4610331	3696165

4 ..	4057317	56424357	1472823	4948911	23215302	41284188	45770373
5 ..	26285094	47017476	4040388	42779583	1252746	10631412	5693787
6 ..	1721115	50820858	141075	22572	46938474	2110482	349866
7 ..	2663496	18841977	40522383	31290435	1185030	33858000	423225
8 ..	31832163	13345695	36211131	18362322	3459159	49161816	16861284
9 ..	400653	2059695	45815517	152361	32255388	1929906	112860
10 ..	22803363	513513	1495395	47751066	1788831	36905220	4576473
11 ..	558657	50154984	310365	39839580	11737440	20596950	40234590
12 ..	33886215	1788831	2753784	4384611	39862152	5366493	21505473

Multiply by (b) all the numbers in the rows named.

Row							
1 ..	1788831	65302	100489	69106	2270988	95100	225704
2 ..	258672	690426	158817	8242	271352	1309527	685037
3 ..	635902	208903	284983	1154197	69423	258989	207635
4 ..	227923	3169683	82737	278009	1304138	2319172	2571187
5 ..	1476586	2641244	226972	2403177	70374	597228	319853
6 ..	96685	2854902	7925	1268	2636806	118558	19654
7 ..	149624	1058463	2276377	1757765	66570	1902000	23775
8 ..	1788197	749705	2034189	1031518	194321	2761704	947196
9 ..	22507	115705	2573723	8559	1811972	108414	6340
10 ..	1280997	28847	84005	2682454	100489	2073180	257087
11 ..	31383	2817496	17435	2238020	659360	1157050	2260210
12 ..	1903585	100489	154696	246309	2239288	301467	1208087

Multiply by (c) all the numbers in the rows named.

Row							
1 ..	40426452	1475784	2270988	1561752	51322896	2149200	5100768
2 ..	5845824	15603192	3589164	186264	6132384	29594484	15481404
3 ..	14370984	4721076	6440436	26084124	1568916	5852988	4692420
4 ..	5150916	71632836	1869804	6282828	29472696	52411824	58107204
5 ..	33369912	59690448	5129424	54310284	1590408	13496976	7228476
6 ..	2185020	64518984	179100	28656	59590152	2679336	444168
7 ..	3381408	23920596	51444684	39724380	1504440	42984000	537300
8 ..	40412124	16942860	45971388	23311656	4391532	62412768	21406032
9 ..	508644	2614860	58164516	193428	40949424	2450088	143280
10 ..	28949724	651924	1898460	60621768	2270988	46852560	5810004
11 ..	709236	63673632	394020	50577840	14901120	26148600	51079320
12 ..	43019820	2270988	3496032	5566428	50606496	6812964	27302004

Multiply by (d) all the numbers in the rows named.

Row							
1 ..	4017816	146672	225704	155216	5100768	213600	506944
2 ..	580992	1550736	356712	18512	609472	2941272	1538632
3 ..	1428272	469208	640088	2592392	155928	581704	466360
4 ..	511928	7119288	185832	624424	2929168	5208992	5775032
5 ..	3316496	5932384	509792	5397672	158064	1341408	718408
6 ..	217160	6412272	17800	2848	5922416	266288	44144
7 ..	336064	2377368	5112872	3948040	149520	4272000	53400
8 ..	4016392	1683880	4568904	2316848	436456	6202944	2127456
9 ..	50552	259880	5780728	19224	4069792	243504	14240
10 ..	2877192	64792	188680	6024944	225704	4656480	577432
11 ..	70488	6328256	39160	5026720	1480960	2598800	5076560
12 ..	4275560	225704	347456	553224	5029568	677112	2713432

Examples in Short Division.

Divide the three last rows of Table B (page 54) by the Divisors named.

Divisors.							
2 ..	2163-1	11162-1	330751-1	135800	160-1	407312-1	410832-1
2 ..	2700-1	320601	36170-1	406173	285	61601-1	250600-1
2 ..	1552-1	68270-1	103270-1	77056	309-1	150307	410057
3 ..	1442-1	7441-2	220501	90533-1	107	271541-2	273888-1
3 ..	1800-1	213734	24113-2	270782	190	41067-2	167067
3 ..	1035	45513-2	68847	51370-2	206-1	100204-2	273371-1
4 ..	1081-3	5581-1	165375-3	67900	80-1	203656-1	205416-1
4 ..	1350-1	160300-2	18085-1	203086-2	142-2	30800-3	125300-1
4 ..	776-1	34135-1	51635-1	38528	154-3	75153-2	205028-2
5 ..	865-2	4465	132300-3	54320	64-1	162925	164333
5 ..	1080-1	128240-2	14468-1	162469-1	114	24640-3	100240-1
5 ..	621	27308-1	41308-1	30822-2	123-4	60122-4	164022-4
6 ..	721-1	3720-5	110250-3	45266-4	53-3	135770-5	136944-1
6 ..	900-1	106867	12056-5	135391	95	20533-5	83533-3
6 ..	517-3	22756-5	34423-3	25685-2	103-1	50102-2	136685-4
7 ..	618-1	3189-2	94500-3	38800	45-6	116375	117380-5
7 ..	771-4	91600-2	10334-3	116049-3	81-3	17600-3	71600-1
7 ..	443-4	19505-6	29505-6	22016	88-3	42944-6	117159-1
8 ..	540-7	2790-5	82687-7	33950	40-1	101828-1	102708-1
8 ..	675-1	80150-2	9042-5	101543-2	71-2	15400-3	62650-1
8 ..	388-1	17067-5	25817-5	19264	77-3	37576-6	102514-2

9 ..	480-7	2480-5	73500-3	30177-7	35-6	90513-8	91296-1
9 ..	600-1	71244-6	8037-8	90260-6	63-3	13689-2	55689
9 ..	345	15171-2	22949	17123-5	68-7	33401-5	91123-7
11 ..	393-4	2029-6	60136-7	24690-10	29-2	74056-9	74696-9
11 ..	491	58291-1	6576-5	73849-7	51-9	11200-3	45563-8
11 ..	282-3	12412-9	18776-5	14010-2	56-3	27328-6	74555-9
12 ..	360-7	1860-5	55125-3	22633-4	26-9	67885-5	68472-1
12 ..	450-1	53433-6	6028-5	67695-6	47-6	10266-11	41766-9
12 ..	258-9	11378-5	17211-9	12842-8	51-7	25051-2	68342-10

Examples in Division derived from Table A, page 16.

Take for Divisor the first two figures of each line, and for Dividends write down six figures commencing at a, b, c, &c., in succession.

A ..	10124-9	6902-6	12417-22	10966-36	15327-11	2328-42	4420-5
B ..	10085	9941-4	8502-21	39575-4	32115-13	2974-2	29741-6
C ..	10109-18	4706-56	10922-22	789	7890-7	6611-63	5876-52
D ..	10032-57	6994-23	3276-37	6098-29	7650-46	9839-40	5062-7
E ..	10086-28	3037-3	8631-27	10226-1	4434-9	862-68	8627-42
F ..	10057-46	11024-50	5769-66	12923-58	9835-48	8804-64	13422-50
G ..	10107-16	3034-2	10732-33	9287-19	14442-20	7169-8	12868-10
H ..	10103-39	5801-12	10393-37	8700-38	15580-29	12949-40	10452-3
I ..	10071-11	9804-12	7134-24	10741-11	16504-12	13528-22	14074-23
J ..	10062-9	13667-11	6240	18921-20	15305-15	22621-19	8827
K ..	10210	18767-3	21005-10	43392-1	17254-6	5878-7	58786-4
L ..	10151-8	4738-17	15127-17	22243-10	28884-28	30784-22	17524-17

For Dividends write down eight figures beginning at a, b, c, &c., successively, and for Divisor take the first three figures of the line beneath.

A ..	242796-207	165525-209	297793-89	263001-205	367575-190
B ..	26444-549	26067-441	22296-199	103772-722	84212-440
C ..	111577-644	51948-591	120551-525	8708-360	87084-592
D ..	81171-220	56588-303	26508-880	49339-712	61898-211
E ..	137881-166	41516-525	117990-667	139790-702	60614-504
F ..	130847-384	143428-479	75066-3	168135-407	127959-439
G ..	121573-413	36494-200	129095-282	111711-163	173717-270
H ..	127820-303	73389-290	131489-41	110071-326	197105-127

Examples in Addition of Money derived from Table C, page 64.

Write down as many of the top rows as are indicated by the figures in the margin and add up.

No. of rows.	£	s.	d.	£	s.	d.	£	s.	d.
3 ...	494	10	4	845	10	6	2318	6	6¾
4 ...	866	4	3	1061	15	10½	2349	13	9¼
5 ...	1392	3	7	1775	12	4	2354	14	2
6 ...	1856	17	5	2491	16	1½	2355	13	8¼
7 ...	2130	12	9	2808	1	6¼	2358	16	7¼
8 ...	2445	18	11	3607	2	2½	2359	13	10½
9 ...	3159	3	5	4407	15	9	2368	1	4¾
10 ...	3249	6	10	4824	6	11	2375	16	8¾
11 ...	3556	2	2	5567	15	2¾	2379	2	10¼

Write down as many of the bottom rows as are indicated by the figures in the margin and add up.

No. of rows.	£	s.	d.	£	s.	d.	£	s.	d.
3 ...	1110	3	3	1960	13	0¼	19	8	11¾
4 ...	1425	9	5	2759	13	8½	20	6	3
5 ...	1699	4	9	3075	19	1¼	23	9	2
6 ...	2163	18	7	3792	2	10¾	24	8	8¼
7 ...	2689	17	11	4505	19	4¼	29	9	1
8 ...	3061	11	10	4722	4	8¾	60	16	3½
9 ...	3303	8	1	5034	2	0½	820	17	3¼
10 ...	3434	15	6	5251	5	3	1675	16	9½

Addition of Money (derived from Table C).

Write down the number of Addenda named (taken in columns), beginning at the letter named.

	Six.			Seven.			Eight.			Nine.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
a ...	1856	17	5	2130	12	9	2445	18	11	3159	3	5
b ...	2009	6	1	2324	12	3	3037	16	9	3128	0	2
c ...	2193	4	10	2906	9	4	2996	12	9	3303	8	1
d ...	2664	13	1	2754	16	6	3061	11	10	3378	1	9¾
e ...	2383	2	7	2689	17	11	3006	7	10¾	3223	11	1¼
f ...	2163	18	7	2480	8	6¾	2697	11	9¼	3009	9	1
g ...	2015	14	8¾	2232	17	11¼	2544	15	3	2761	0	7½
h ...	1959	2	7¼	2270	19	11	2487	5	3½	3201	1	9
i ...	1955	13	9	2171	19	1½	2885	15	7	3601	19	4½
k ...	2491	16	1½	2808	1	6¼	3607	2	2½	4407	15	9
l ...	2491	11	6½	3290	12	2¾	4091	5	9¼	4507	16	11¼
m ...	3073	9	0¼	3874	2	6¾	4290	13	8¾	5034	2	0½

n ...	3562	5	3	3978	16	5	4722	4	$8\frac{3}{4}$	5425	10	$9\frac{1}{2}$
o ...	3762	11	$0\frac{1}{2}$	4505	19	$4\frac{1}{4}$	5209	5	5	6064	4	$11\frac{1}{4}$
p ...	3792	2	$10\frac{3}{4}$	4495	8	$11\frac{1}{2}$	5350	8	$5\frac{3}{4}$	6110	9	$5\frac{1}{2}$
q ...	3779	5	2	4634	4	$8\frac{1}{4}$	5394	5	8	5425	12	$10\frac{1}{2}$
r ...	4317	19	$3\frac{1}{2}$	5078	0	$3\frac{1}{4}$	5109	7	$5\frac{3}{4}$	5114	7	$10\frac{1}{2}$
s ...	4278	19	7	4310	6	$9\frac{1}{2}$	4315	7	$2\frac{1}{4}$	4316	6	$8\frac{1}{2}$
t ...	2355	13	$8\frac{1}{4}$	2358	16	$7\frac{1}{4}$	2359	13	$10\frac{1}{2}$	2368	1	$4\frac{3}{4}$
u ...	1655	10	$6\frac{1}{2}$	1656	7	$9\frac{3}{4}$	1664	15	4	1672	10	8
v ...	801	8	$3\frac{1}{2}$	809	15	$9\frac{3}{4}$	817	11	$1\frac{3}{4}$	820	17	$3\frac{1}{4}$
w ...	49	14	10	57	10	2	60	16	$3\frac{1}{2}$	182	2	$11\frac{1}{2}$
x ...	24	8	$8\frac{1}{4}$	145	15	$4\frac{1}{4}$	277	2	$9\frac{1}{4}$	518	19	$0\frac{1}{4}$
y ...	273	0	4	514	16	7	886	10	6	1412	9	10
z ...	877	5	$8\frac{1}{2}$	1403	5	$0\frac{1}{2}$	1867	18	$10\frac{1}{2}$	2141	14	$2\frac{1}{2}$

Addition of Money (derived from Table C).

Write down the number of Addenda named (taken in rows), beginning at the letter named.

	Six.			Seven.			Eight.			Nine.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
a ...	2344	12	$10\frac{1}{4}$	2586	9	$1\frac{1}{4}$	2898	6	5	3658	7	$4\frac{3}{4}$
b ...	2517	4	$8\frac{1}{4}$	2888	18	$7\frac{1}{4}$	3105	3	$11\frac{3}{4}$	3136	11	$2\frac{1}{4}$
c ...	1933	1	$0\frac{1}{2}$	2459	0	$4\frac{1}{2}$	3172	16	10	3177	17	$2\frac{3}{4}$
d ...	1864	2	$8\frac{1}{4}$	2328	16	$6\frac{1}{4}$	3045	0	$3\frac{3}{4}$	3045	19	10
e ...	2426	13	4	2700	8	8	3016	14	$0\frac{3}{4}$	3019	16	$11\frac{3}{4}$
f ...	1775	0	$9\frac{1}{2}$	2090	6	$11\frac{1}{2}$	2889	7	$7\frac{3}{4}$	2890	4	11
g ...	1708	7	$9\frac{1}{4}$	2421	12	$3\frac{1}{4}$	3222	5	$9\frac{3}{4}$	3230	13	4
h ...	2637	9	$8\frac{1}{4}$	2727	13	$1\frac{1}{4}$	3144	4	$3\frac{1}{4}$	3151	19	$7\frac{1}{4}$
i ...	2036	15	$5\frac{3}{4}$	2343	10	$9\frac{3}{4}$	3086	19	$1\frac{1}{2}$	3090	5	3
k ...	2465	2	$5\frac{1}{4}$	2776	19	9	3537	0	$8\frac{3}{4}$	3908	14	$7\frac{3}{4}$
l ...	2757	11	$2\frac{1}{4}$	2973	16	$6\frac{3}{4}$	3005	3	$9\frac{1}{4}$	3531	3	$1\frac{1}{4}$
m ...	2217	4	$1\frac{1}{2}$	2931	0	7	2936	0	$11\frac{3}{4}$	3400	14	$9\frac{3}{4}$
n ...	1957	2	$7\frac{1}{4}$	2673	6	$4\frac{3}{4}$	2674	5	11	2948	1	3
o ...	2174	9	4	2490	14	$8\frac{3}{4}$	2493	17	$7\frac{3}{4}$	2809	3	$9\frac{3}{4}$
p ...	1625	13	$1\frac{1}{2}$	2424	13	$9\frac{3}{4}$	2425	11	1	3138	15	7
q ...	2147	16	$11\frac{1}{4}$	2948	10	$5\frac{3}{4}$	2956	18	0	3047	1	5
r ...	2412	6	$11\frac{1}{4}$	2828	18	$1\frac{1}{4}$	2836	13	$5\frac{1}{4}$	3143	8	$9\frac{1}{4}$
s ...	1630	6	$3\frac{3}{4}$	2373	14	$7\frac{1}{2}$	2377	0	9	2498	7	5
t ...	2460	9	$9\frac{1}{4}$	3220	10	9	3592	4	8	3808	10	$0\frac{1}{2}$
u ...	2756	13	$4\frac{1}{4}$	2788	0	$6\frac{3}{4}$	3313	19	$10\frac{3}{4}$	4027	16	$4\frac{1}{4}$
v ...	2619	3	$3\frac{1}{4}$	2624	3	8	3088	17	6	3805	1	$3\frac{1}{4}$
w ...	2457	1	$0\frac{1}{4}$	2458	0	$6\frac{1}{2}$	2731	15	$10\frac{1}{2}$	3048	1	$3\frac{1}{4}$
x ...	1708	10	$0\frac{1}{4}$	1709	7	$3\frac{1}{2}$	2422	11	$9\frac{1}{2}$	3223	5	4
y ...	2029	17	5	2037	12	9	2344	8	1	3087	16	$4\frac{3}{4}$
z ...	1499	1	9	2202	7	$9\frac{3}{4}$	2333	15	$2\frac{3}{4}$	2550	18	$5\frac{1}{4}$

Subtraction of Money derived from Table C, page 64.

Find the difference between the amounts indicated in the margin. This method would furnish 300 Subtractions, of which 96 are here given.

	£	s.	d.
a b ...	10	0	9
a c ...	120	9	7
a d ...	250	7	3
a e ...	404	12	8
a f ...	343	7	2
a g ...	152	8	8
a h ...	193	19	6
a i ...	591	17	10
a k ...	195	3	3¾
a l ...	95	16	6½
a m ...	190	10	7¾
a n ...	94	18	8½
a o ...	592	9	9½
a p ...	594	17	1½
a q ...	194	18	8¾
a r ...	677	14	0¼
a s ...	679	6	10½
a t ...	581	19	4¾
a u ...	733	12	10¼
a v ...	638	14	3¾
a w ...	89	19	5½
a x ...	120	7	1¾
a y ...	120	9	4¾
a z ...	113	11	4
b c ...	110	8	10
b d ...	240	6	6
b e ...	394	11	11
b f ...	333	6	5
b g ...	142	7	11
b h ...	183	18	9
b i ...	581	17	1
b k ...	185	2	6¾

	£	s.	d.
b l ...	85	15	9½
b m ...	180	9	10¾
b n ...	84	17	11½
b o ...	582	9	0½
b p ...	584	16	4½
b q ...	184	17	11¾
b r ...	667	13	3¼
b s ...	669	6	1½
b t ...	571	18	7¾
b u ...	723	12	1¼
b v ...	628	13	6¾
b w ...	100	0	2½
b x ...	130	7	10¾
b y ...	130	10	1¾
b z ...	123	12	1
c d ...	129	17	8
c e ...	284	3	1
c f ...	222	17	7
c g ...	31	19	1
c h ...	73	9	11
c i ...	471	8	3
c k ...	74	13	8¾
c l ...	24	13	0½
c m ...	70	1	0¾
c n ...	25	10	10½
c o ...	472	0	2½
c p ...	474	7	6½
c q ...	74	9	1¾
c r ...	557	4	5¼
c s ...	558	17	3½
c t ...	461	9	9¾
c u ...	613	3	3¼

	£	s.	d.
c v ...	518	4	8¾
c w ...	210	9	0½
c x ...	240	16	8¾
c y ...	240	18	11¾
c z ...	234	0	11
d e ...	154	5	5
d f ...	92	19	11
d g ...	97	18	7
d h ...	56	7	9
d i ...	341	10	7
d k ...	55	3	11¼
d l ...	154	10	8½
d m ...	59	16	7¼
d n ...	155	8	6½
d o ...	342	2	6½
d p ...	344	9	10½
d q ...	55	8	6¼
d r ...	427	6	9¼
d s ...	428	19	7½
d t ...	331	12	1¾
d u ...	483	5	7¼
d v ...	388	7	0¾
d w ...	340	6	8½
d x ...	370	14	4¾
d y ...	370	16	7¾
d z ...	363	18	7
e f ...	61	5	6
e g ...	252	4	0
e h ...	210	13	2
e i ...	187	5	2
e k ...	209	9	4¼
e l ...	308	16	1½

Multiplication of Money, derived from Table C, page 64.

Multiply the first row by the numbers named.

By	£	s.	d.	£	s.	d.	£	s.	d.
3 ...	364	0	0	949	9	11¼	2109	18	2¼
4 ...	485	6	8	1265	19	11	2813	4	3
5 ...	606	13	4	1582	9	10¾	3516	10	3¾
6 ...	728	0	0	1898	19	10½	4219	16	4½
7 ...	849	6	8	2215	9	10¼	4923	2	5¼
8 ...	970	13	4	2531	19	10	5626	8	6
9 ...	1092	0	0	2848	9	9¾	6329	14	6¾
10 ...	1213	6	8	3164	19	9½	7033	0	7½
11 ...	1334	13	4	3481	9	9¼	7736	6	8¼
12 ...	1456	0	0	3797	19	9	8439	12	9

Multiply the second row by the numbers named.

By	£	s.	d.	£	s.	d.	£	s.	d.
3 ...	394	2	3	651	9	7½	2564	18	6¾
4 ...	525	9	8	868	12	10	3419	18	1
5 ...	656	17	1	1085	16	0½	4274	17	7¼
6 ...	788	4	6	1302	19	3	5129	17	1½
7 ...	919	11	11	1520	2	5½	5984	16	7¾
8 ...	1050	19	4	1737	5	8	6839	16	2
9 ...	1182	6	9	1954	8	10½	7694	15	8¼
10 ...	1313	14	2	2171	12	1	8549	15	2½
11 ...	1445	1	7	2388	15	3½	9404	14	8¾
12 ...	1576	9	0	2605	18	6	10259	14	3

Multiply the third row by the numbers named.

By	£	s.	d.	£	s.	d.	£	s	d.
3 ...	725	8	9	935	11	11¼	2280	2	11¼
4 ...	967	5	0	1247	9	3	3040	3	11
5 ...	1209	1	3	1559	6	6¾	3800	4	10¾
6 ...	1450	17	6	1871	3	10½	4560	5	10½
7 ...	1692	13	9	2183	1	2¼	5320	6	10¼
8 ...	1934	10	0	2494	18	6	6080	7	10
9 ...	2176	6	3	2806	15	9¾	6840	8	9¾
10 ...	2418	2	6	3118	13	1½	7600	9	9½
11 ...	2659	18	9	3430	10	5¼	8360	10	9¼
12 ...	2901	15	0	3742	7	9	9120	11	9

Multiply the fourth row by the numbers named.

By	£	s.	d.	£	s.	d.	£	s.	d.
3 ...	1115	1	9	648	16	1½	94	1	7½
4 ...	1486	15	8	865	1	6	125	8	10
5 ...	1858	9	7	1081	6	10½	156	16	0½
6 ...	2230	3	6	1297	12	3	188	3	3
7 ...	2601	17	5	1513	17	7½	219	10	5½
8 ...	2973	11	4	1730	3	0	250	17	8
9 ...	3345	5	3	1946	8	4½	282	4	10½
10 ...	3716	19	2	2162	13	9	313	12	1
11 ...	4088	13	1	2378	19	1½	344	19	3½
12 ...	4460	7	0	2595	4	6	376	6	·6

Multiply the fifth row by the numbers named.

By	£	s.	d.	£	s.	d.	£	s.	d.
3 ...	1577	18	0	2141	9	4½	15	1	2¼
4 ...	2103	17	4	2855	5	10	20	1	7
5 ...	2629	16	8	3569	2	3½	25	1	11¾
6 ...	3155	16	0	4282	18	9	30	2	4½
7 ...	3681	15	4	4996	15	2½	35	2	9¼
8 ...	4207	14	8	5710	11	8	40	3	2
9 ...	4733	14	0	6424	8	1½	45	3	6¾
10 ...	5259	13	4	7138	4	7	50	3	11½
11 ...	5785	12	8	7852	1	0½	55	4	4¼
12 ...	6311	12	0	8565	17	6	60	4	9

Multiply the sixth row by the numbers named.

By	£	s.	d.	£	s.	d.	£	s.	d.
3 ...	1394	1	6	2148	11	4½	2	18	6¾
4 ...	1858	15	4	2864	15	2	3	18	1
5 ...	2323	9	2	3580	18	11½	4	17	7¼
6 ...	2788	3	0	4297	2	9	5	17	1½
7 ...	3252	16	10	5013	6	6½	6	16	7¾
8 ...	3717	10	8	5729	10	4	7	16	2
9 ...	4182	4	6	6445	14	1½	8	15	8¼
10 ...	4646	18	4	7161	17	11	9	15	2½
11 ...	5111	12	2	7878	1	8½	10	14	8¾
12 ...	5576	6	0	8594	5	6	11	14	3

Multiply the seventh row by the numbers named.

By	£	s.	d.	£	s.	d.	£	s.	d.
14 ...	3832	14	8	4427	15	6½	44	0	10
16 ...	4380	5	4	5060	6	4	50	6	8
18 ...	4927	16	0	5692	17	1½	56	12	6
20 ...	5475	6	8	6325	7	11	62	18	4
22 ...	6022	17	4	6957	18	8½	69	4	2
24 ...	6570	8	0	7590	9	6	75	10	0
25 ...	6844	3	4	7906	14	10¾	78	12	11
27 ...	7391	14	0	8539	5	8¾	84	18	9
32 ...	8760	10	8	10120	12	8	100	13	4
36 ...	9855	12	0	11385	14	3	113	5	0
42 ...	11498	4	0	13283	6	7½	132	2	6
48 ...	13140	16	0	15180	19	0	151	0	0
54 ...	14783	8	0	17078	11	4½	169	17	6
72 ...	19711	4	0	22771	8	6	226	10	0

Multiply the eighth row by the numbers named.

By	£	s.	d.	£	s.	d.	£	s.	d.
15 ...	4729	12	6	11985	10	3¾	12	19	0¾
21 ...	6621	9	6	16779	14	5¼	18	2	8¼
35 ...	11035	15	10	27966	4	0¾	30	4	5¾
45 ...	14188	17	6	35956	10	11¼	38	17	2¼
56 ...	17657	5	4	44745	18	6	48	7	2
63 ...	19864	8	6	50339	3	3¾	54	8	0¾
64 ...	20179	14	8	51138	4	0	55	5	4
81 ...	25539	19	6	64721	15	8¼	69	18	11¼
88 ...	27747	2	8	70315	0	6	75	19	10
90 ...	28377	15	0	71913	1	10½	77	14	4½
96 ...	30269	12	0	76707	6	0	82	18	0
99 ...	31215	10	6	79104	8	0¾	85	9	9¾
100 ...	31530	16	8	79903	8	9	86	7	1
108 ...	34053	6	0	86295	14	3	93	5	3
120 ...	37837	0	0	95884	2	6	103	12	6

Division of Money. Table C, page 64.

Divide the first row by the Divisors named (showing any remainders).

By	£	s.	d.	q.	£	s.	d.	q.	£	s.	d.	q.
2 ...	60	13	4		158	4	11¾	- 1	351	13	0¼	- 1
3 ...	40	8	10½	- 2	105	9	11¾	- 2	234	8	8¼	
4 ...	30	6	8		79	2	5¾	- 3	175	16	6	- 3
5 ...	24	5	4		63	5	11¾	- 4	140	13	2½	- 1
6 ...	20	4	5¼	- 2	52	14	11¾	- 5	117	4	4	- 3
7 ...	17	6	8		45	4	3¼	- 4	100	9	5¼	
8 ...	15	3	4		39	11	2¾	- 7	87	18	3	- 3
9 ...	13	9	7½	- 2	35	3	3¾	- 8	78	2	10¾	
10 ...	12	2	8		31	12	11¾	- 9	70	6	7¼	- 1
11 ...	11	0	7¼	- 1	28	15	5¼	- 8	63	18	8¾	- 2
12 ...	10	2	2½	- 8	26	7	5¾	- 11	58	12	2	- 3

Divide the second row by the Divisors named (showing any remainders).

By	£	s.	d.	q.	£	s.	d.	q.	£	s.	d.	q.
2 ...	65	13	8½		108	11	7¼		427	9	9	- 1
3 ...	43	15	9½	- 2	72	7	8¾	- 1	284	19	10	- 1
4 ...	32	16	10¼		54	5	9½	- 2	213	14	10½	- 1
5 ...	26	5	5¾	- 1	43	8	7¼	- 4	170	19	10¾	- 2
6 ...	21	17	10¾	- 2	36	3	10¼	- 4	142	9	11	- 1
7 ...	18	15	4	- 4	31	0	5½		122	2	9¼	- 6
8 ...	16	8	5	- 4	27	2	10¾	- 2	106	17	5¼	- 1
9 ...	14	11	11	- 8	24	2	6¾	- 7	94	19	11¼	- 4
10 ...	13	2	8¾	- 6	21	14	3¾	- 4	85	9	11¼	- 7
11 ...	11	18	10¼	- 1	19	14	10	- 2	77	14	6	- 1
12 ...	10	18	11¼	- 8	18	1	11	- 10	71	4	11½	- 3

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